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*Lately published, by* CHARLES RIVINGTON,  
*and* STEPHEN AUSTEN,

*The* SECOND EDITION, of

**M**ATERIA MEDICA: Or, A new Description of the *Virtues* and *Effects* of all Drugs, or Simple Medicines, now in Use: Where from their *Principles*, these *Virtues*, both *Common* and *Specifick*, are shewn, with the *Preparations* of each; and *Prescriptions*: As also judicious Remarks are every where interspers'd. Done from the *Latin* Dictates of a Physician, who was a Register'd Pupil of Dr. PAUL HERMAN, late Professor of Botany in *Leyden*. To which is prefix'd, A General Introduction, containing a mechanical Account of the Operations of all Medicines upon *Human Bodies*. Also *Critical Observations* are added to each Simple through the Whole, wherever it was found necessary. In Two Volumes. By E. STROTHER, M. D. and Fellow of the College of Physicians. Price 10 s.

**I**Ntroducō ad Prudentiam: Or, Directions, Counfels, and Cautions, tending to prudent Management of Affairs in Common Life. In Two Parts. To which is added, An Appendix concerning Sincerity and Deceit. The Whole compiled by THOMAS FULLER, M. D.

6511  
**EXANTHEMATOLOGIA:**

Or, An ATTEMPT to Give a

**Rational ACCOUNT**  
*Tim<sup>o</sup>. OF Morbion*  
**Eruptive FEVERS,**

ESPECIALLY OF THE  
*Measles and Small Pox.*

---

In TWO PARTS.

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**PART I. Of the Blood, the Air, Venoms, Infection; Fevers**  
of all Kinds in general, and of such in particular as are Morbillous  
with Spots, or Variolous with Pustles; and in Specie, of most of the  
spurious Sorts mentioned in Books, and met with in Practice; with  
their Varieties, Descriptions, Names, &c. but more professedly and  
fully of the True MEASLES.

To which is prefix'd,

**A Delineation and Comparison of the OLD and NEW PHILOSOPHY.**

In a Dialogue. By an unknown Hand.

**PART II. Of the SMALL-POX, its Nature, Genius,**  
and Production; of its Causes, Differences, Diagnostic and Prognostic  
Signs; also of Prevention, Management, Medicines, and Methods to  
be observed and used in the Cure of the same; and its Symptoms,  
from its first Invasion, through all its Periods and Progress, to its  
Conclusion: And lastly, of the BLEEDING POX.

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To which is added,

**An APPENDIX concerning INOCULATION.**

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The whole Illustrated with many New, Curious, and Useful Particulars.

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**By THOMAS FULLER, M.D.**

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L O N D O N :

Printed for CHARLES RIVINGTON, and STEPHEN  
AUSTEN, in St. Paul's Church-yard.

**M.DCC.XXX.**





T O  
*Sir* HANS SLOANE, *Bar<sup>t</sup>.*

PRESIDENT of the  
COLLEGE of PHYSICIANS;  
AND

*To the FELLOWS of the same.*

*SIR S,*



IN antient Times, when Physic was in its Nonage, it was so far from being an Art or Science, that it was not so much as a Profession.

IT is reported by *Herodotus* and *Strabo*, that the old *Babylonians* and *Egyptians* were wont to bring forth their Sick, and lay them in the Streets and Highways, that all Comers who had ever seen or heard of the like Maladies, might advise for them such Remedies as they had known successful. And they used to keep a Register of their Cures in the Temples of *Æsculapius* and *Diana*.

B

AMONG

AMONG the first Physicians, whose Names we find recorded in Books, were *Æsculapius*, (who was said to be Seven Hundred Years before *Hippocrates*) *Machaon*, *Podalirius*, *Chiron*, *Dio-cles*, *Empedocles*, *Melampus*, *Polybius*, and others of less Note.

MOST of these were only Surgeons, and understood little, but stanching of Blood, and healing of Wounds and Ulcers.

AND as to those that pretended more especially to Physick, they had no settled Philosophy, nor Anatomy, nor medical Skill. They had some little traditionary Knowledge of the Virtues of Herbs; and practised (just as our wise Women do) wholly by Receipt Books.

THIS blind Practice went on, till between four and five Hundred Years before Christ, when the Divine *Hippocrates* arose. His great Genius, and inquisitive Temper, put him upon searching the Temple-Registers; making diligent Observations, joining Philosophy to Physick, and settling a Rationale.

AND truly, considering his Time, he proceeded in these Works much farther than it might have been thought any one could possibly have done.

HE left many Books behind him; but afterwards it happened, that several of them perished  
when

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when the *Alexandrian* Library was burnt; and several more in the Year 640, when the Calif took *Alexandria*; and caused the Books of another fine Library, that had been collected there again, to be burnt. Several of his other Writings were devoured by Time and Moths; and as for the rest, they were universally dispersed; and so most of his Works were, as 'twere, lost.

ADD to this, that divers Sectaries sprang up; such as *Asclepiades*, *Themison*, *Theffalus*, and others; who made Parties, and set up for themselves, and decry'd and kept down others, as much as they could.

FOR these Reasons, the Hippocratic Physic was under a Cloud; was disregarded, and almost forgot; till about Six Hundred Years after him, a glorious bright Star appeared (the illustrious *Galen*). He dispelled the Darkness of the Age; he took *Hippocrates* out of his long Obscurity; learnedly Explained, powerfully Vindicated, and Restored him to as much Reputation as ever he had enjoyed before.

THIS extraordinary Man wrote a vast deal; but part of his Writings had the same Fate with those of *Hippocrates*, being likewise consumed when the Temple of *Peace*, and the Emperor's Library were burnt.

HE was a great Philosopher, and Anatomist: He made a most wonderful Progress; improved Theory, Practice and Pharmacy; and carried Physic many Degrees farther than any, or even all had done since *Hippocrates*.

AFTER him, about the fourth, fifth, sixth and seventh Centuries, followed the Four famous *Grecians*, *Oribasius*, *Ætius*, *Alexander Trallianus*, and *Paulus Ægineta*.

ALL these were excellent Compilers, and made great Collections out of *Galen* and others: And commented upon them, and added, every one of them, many Things of their own. Yet they studied, and depended upon their Authors so much, that they themselves discovered little that was new and useful; and so left the Art not much better than they found it.

FROM Five Hundred and Sixty, to One Thousand and Sixty, Five Hundred Years, there is a Chasm: For the barbarous Nations making many Incursions and Devastations, and *Athens* and *Alexandria* (those famous Schools of Learning) being destroyed, Ignorance and Darkness came in like a Flood and universally prevailed; and all good Literature, Arts and Sciences (through both the Eastern and Western Empire) fell miserably low, and Physic, among the rest, dwindled down into  
such

such a poor State, that it was not much better, than it was in the old Times before *Hippocrates*.

YET *Actuarius* was a Person of good Note, he flourished about the Twelfth Century; and *Myrepsus* about the Fourteenth; and he was the last of the *Greek* Physicians.

BUT in those middle Times, when all was now gone from the *Greeks* and *Latins*; Learning passed to the *Saracens*, and flourished in *Asia*, *Africa* and *Spain*, from the Ninth Century to the Fourteenth, full Four Hundred Years. But to give some Account of them.

1. THEY wrote in the *Arabian* Tongue, Books almost enough to furnish a pretty good Library. And they took a world of Pains; not in giving us any thing of their own, that might be practical and useful; but in Translating and Commenting upon others. But forasmuch as they did not thoroughly understand the *Greek* Language, they miserably corrupted *Hippocrates*, *Galen* and *Aristotle*, ran into many Mistakes; and fiercely combated one another upon them.

HOWEVER, to give them their due, it was they that first observed, and wrote of the Small Pox: But unless that Distemper were much different in their Times and Countries, from what it is now among us, their Performances are so monstrously Defective and Erroneous, that if we should manage our  
variolaous

variolous Patients, wholly by their Books and Rules, all the World would cry out of us.

2. THEY (especially *Mefue*) have left us an infinite Number of Forms of *Galenical* Medicines; consisting often of such worthless, inconsistent, and sometimes noxious Simples; that it is manifest the Composers of them had no tolerable Notion of their Virtues.

AND generally their Ingredients were so unreasonably numerous, and so senselessly chose; that it is impossible to judge, *a priori*, what Effects such Gallimaufries could produce.

WE were wont to have abundance of them in our Shops; but our Physicians now a-days, who are able to Prescribe such Bills as are short, neat and effectual; nauseate the *Arabian* monstrous Medleys, and seldom order any of them.

SYRUPS (it's true) were an *Arabian* Invention; but they rather serve to render Medicines pleasant, than to conserve any Virtues of Ingredients in themselves. And therefore Physic would suffer no great Damage by it, if most of them were thrown out of the Shop.

As they had brought Pathologie and Pharmacy out of *Greece*; so they fetched Chymistry out of *Egypt*. They worked much in Metallourgie, *viz.* in the exalting and transmuting of Metals; but

but I think very little in Chymiatric : For I do not know that we have from them so much as one good standard chymical Medicine this Day among us. All that they can pretend to, is, That they invented distilled Waters.

IN fine, their Works are of so little Esteem with us, in this Age, that I never knew any Student read the *Arabian* Authors : And I am of Opinion, that Physic was so far from getting any substantial Improvement from them, that it scarce kept its own in their Times.

AFTER them medical Affairs miserably declined ; insomuch that there was found but only here and there, a Man of Genius and Learning, that was rightly brought up in the Study and Practice of Physic ; and those that were so (such was the Fashion) did little else in their Writings, but endeavour to make it out, that their Opinions exactly squared with those of *Aristotle* and *Galen*.

FOR the main Business of Curing, lay then in the Hands of illiterate Monks, and odd-headed Chymists ; thus it was for several Ages.

BUT upon the happy Invention of Printing, presently the World being, as 'twere, awaked out of a dull Lethargy ; a new Spirit every where brake out, and a marvellous Light sprang forth : And many extraordinary Men arose, and set themselves upon the Advancement of Learning,  
and

and Acquisition of Knowledge ; and especially of that of Medicine.

THESE excellent publick spirited Persons, by their Ingenuity and Industry, became Benefactors to Mankind, and were famous in their Generations.

THEIR Works (it may be confessed) are not free from Mistakes and Imperfections ; but as Times and Circumstances then were, the Authors could not well avoid them : For,

1. THEY knew nothing of Natural Philosophy beyond *Aristotle's* Elements and Qualities ; and were taught wholly to acquiesce in them ; and therefore they never had a Thought of making such Experiments, and Searches into the Mechanism and Powers of Nature, as the curious *Literati* of our Times have since made.

2. They lived in the Days of the subtle Schoolmen ; the Mode that then reigned, was, not to enter into the Infides of Things ; and get plain and distinct Notions of them ; but to Define, Distinguish, Syllogise, and talk Scholastically ; and to believe *Aristotle*, *Hippocrates* and *Galen* implicitly.

3. IT was their Infelicity to be born before the many grand Discoveries of several considerable Parts and Passages of the Body were made ; before  
that

that principal one of the Circulation of the Blood was found out, or Sanguification, Animal Oeconomy, the Causes of Fevers; and of most other Diseases, were tolerably accounted for; or the Bark of *Peru*; and many other great Medicines, and excellent Methods, that Practice now mainly depends upon, were known and brought into Use.

To these I think I may add, that in their Age an Enthusiastic Alchymy, and a Fanatical Astrology crept in among the Practisers; which (like an *Ignis Fatuus*) dazzling the Eyes of their Understanding, led many of them out of their Way into Briars and Bogs, Difficulties and Errors; superstitious Observations, and silly Methods.

UPON these, and many other Accounts, Physic wanting proper Helps, and meeting with unfurmountable Hindrances, all the Parts and Pains of the Students and Professors, could not then suffice to bring it (as to many Particulars) much beyond Guess and Empiricism.

BUT you, Gentlemen, of our Age, having the Advantages of perusing all that hath hitherto been written of natural Philosophy, Chymistry, and Microscopy, have made such luciferous Experiments, and imparted to us such useful Discoveries in Anatomy, Pathology, Practice, Pharmacy, both Galenical and Spagyrical; have led us into Botany, and all the *Materia Medica*, have furnished the  
C Shops

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Shops with choice Simples, and experienced Compounds; and have brought Physic, and all its Parts, to such a Degree of Perfection, as all the *Virtuosi* and *Æsculapians* were never able to do before you. And now you are at this Day universally and undeniably acknowledged the most learned, and most skilful Body of Philosophers and Physicians, that ever were yet upon the Face of the Earth.

AND since to all this, the Royal Constitution hath placed you in a superior Station, at the Head of the Faculty, we look upon you as, in some sort, appointed to be proper Censors and Judges of the Writings of your Country-men.

FOR these Reasons, I present you with this my Attempt, to give a Rational Account of Eruptive Fevers; and particularly of the Small-Pox.

AND though the World is so ill-natured, that few Authors can stand safe alone, and even our great *Harvey* himself had need of Apologists; yet I do not desire you to indulge me so partially, as to Patronize and Defend any thing you shall dislike in it.

ALL that I ask is, That you would please to favour me so far, as to protect and recommend whatever you shall in it judge to be Reasonable and Useful.

I look

I look upon myself to be the more in Danger of ill Treatment, because I have ventured to take a large Liberty of Thinking by myself, and that differently from others; and perhaps may start some Things which none ever thought of before.

AMONGST other Matters, I have, with Respect to Philosophy, ever been of Opinion, that our Naturalists (to the end that they might make Art short, because Life is so) have been unreasonably Scanty to Nature; when they grant her so small a Number of Elements to make all Things out of.

FOR that the Four of the *Aristotelians*, the Three of the *Cartesians*, the like Number of the *Paracelsians*, and Five of the *Willisians*, are not all, and the whole Number of the Principles that Bodies are constituted of; and that all and every one of them are not in every Body; and that they may be transmuted into one another, has been sufficiently made out by Mr. *Boyle*, and others.

IT remains therefore, that we admit for such, *Democritus's* Atomical Corpuscles, allowing them particular Sizes, Figures, Situations, Contacts, Adhesions, Compositions and Motions almost infinite.

AND upon this Foundation I erect all the Notions I have of Simple and Compound Bodies; with all the Qualities and Powers Inherent, and Operative in them.

As to the Matter of Philosophizing, every Country and every Age, have had their governing Fashion; that of this present one among us, is, to solve and explain all the Phænomena of Nature; all Animal Oeconomy, Causes of Diseases, Reasons of Cure, and Operations of Medicines by Mathematical Modes.

BUT as to myself, when I began my Studies, it was not the Way in *Cambridge*, to apply Mathematics to this Use; Corpuscularian, Mechanical Philosophy was all we went upon. And I then formed my Thoughts and Apprehensions of Things according thereto, and Time hath so established them in me, that I find I cannot now eradicate them, and plant others in their stead.

AND tho' I have not so given up my Reason, as to pin my Faith upon *Cartes* or *Willis*, and blindly and slavishly to believe all they tell me; yet I must confess I have a certain Hankering after the Genius and Manner of their Philosophy. And I indulge myself the more in it, because it puts me on upon Thinking still farther and farther, and upon searching into the Recesses and Finenesses of Nature without End.

WHEREAS Mathematics, when once they bring us to a supposed Demonstration, they chain us fast down upon it, not suffering us to doubt, tho' we  
are

are never so wrong, nor permitting us to step one Foot farther for more Discoveries.

MATHEMATICAL Demonstrations (I allow) are in themselves, when rightly made, as infallibly true, as the Rules and Operations of Arithmetic are ; yet he that worketh them may be as easily mistaken as one may that casteth up a Sum.

FOR while the Abstruseness of its Nature employeth our whole Mind, it may easily put us upon taking up with uncertain Suppositions, instead of true Data.

AND while the Niceness of its Operation makes us fall into puzzling Methods, it may well, instead of giving clear Demonstrations, confound our Understandings, and impose upon us gross Absurdities, and intricate Falsities.

HERE I could prove what I say, and produce monstrous Mistakes of our Mathematical Physicians, but forbear them, because my Temper and Resolution is never directly and designedly (when I can well avoid it) to oppose and combat a Writer.

ONLY I beg leave, just for one Specimen, to note a Passage in Dr. *James Keill's* Essays on Animal Oeconomy.

BORELLI (saith he, p. 79.) hath taken the Pains in Eleven Propositions, to determine it, that  
the

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the Force of the Heart is equal to more than an Hundred Thirty-five Pounds Weight.

AND *Keill* himself by Mathematical Operations and Methods, and Reasonings, which he affirms are certainly just, determines ( p. 87. ) that the Force of the Heart is equal to the Weight of Five Ounces; upon which he might well make the Reflection he does, p. 80. that so much Geometry employed to so little Purpose, by so great a Man, has undoubtedly deterred others from attempting it. Thus far he.

I DO believe with all my Heart, that Nature doth Geometrize in all her Works, and constantly keepeth exact Proportion, Measure and Number; but withal, I am as much assured, that we have not Capacities to take in the distinct Knowledge of them.

AND where there are not, and cannot be given certain determinate Points, Lines and Angles; there cannot possibly be any Demonstration made, or Conclusions drawn.

BUT to come to Particulars: Can any Man, can all the Men in the World, tho' assisted by Anatomy, Chymistry, and the best Glasses, pretend positively and certainly to tell us, what Particles, how sized, figured, situated, mixed, moved, and how many of them are requisite to produce a  
Quar-

Quartan Ague, and how they specifically differ from those of a Tertian ; what peculiar and special Corpuscles those others are, that cause an Epilepsy, Diabetes, or Gout ?

CAN they make it undeniably evident to us, what Medicines have such little specific Bodies, as will directly and electively fly at, engage, correct or conquer hostile morbose Atoms ?

AND if they could do all this, could they also give us a perfect Relation of the Manner of the Encounter ; whether it be *cominùs* or *eminùs*, *punctim* or *cæsùm* ; whether it be by knapping off the Points of the Enemies Spears, breaking asunder their Swords, dulling or sheathing their Edges, knocking the combined Atoms to Pieces, swallowing them up, or blasting them away, as 'twere, with tormentary Explosions.

THESE, and a Thousand more, must be clearly, distinctly and undeniably made out ; and without this, the Phænomena in Physic can never be brought to mathematical Demonstrations.

BUT that which giveth me great Dissatisfaction is, that as to Matter of Fact, it doth not appear, that *Borelli*, *Bellini*, *Pitcairn*, or any other of that Way, were more skilful, or more successful in the finding out, or curing any one Disease, than we who work not by Algebra, Rule and Compass.

THEY

THEY that are of Sentiments different from mine, may pardon me this ; for I only tell what are my Thoughts, and I am not against their publishing of theirs in like manner, if it shall please them so to do. But to come to the Subject of my Book.

THE Small-Pox having of late Years most dreadfully broken into not only *Pauperum Tabernas*, but *Regum Turres* also, and made dismal Havock among all Degrees and Ages of People ; I hoped I might do some Good to the Public, by bringing forth such Things, as by long Practice, Observation and Study, I had found out myself, and collected from others, concerning the Nature, Causes, Prevention and Cure of this most horrible Disease.

MANY of the Matters I here offer, are properly and peculiarly my own ; for I have been more than half a Century of Years solitary in a Country Practice, and could never be so happy as to enjoy the Neighbourhood of an ingenious and friendly Physician, with whom I might converse and exchange Notions.

AND therefore, it could not otherwise be, but that I, continually thinking alone by myself, must fall into such Opinions, and find out such Ways, as were perfectly new.

THO'

THO' the Things here presented seem to me to be rational and useful, yet not being a proper Judge of them myself, I submit them to you; not doubting but that you will make handsome Allowances for the Imbecility of human Understanding, the Difficulty of Philosophical Searches, and the different Apprehensions that one Man hath from another.

IT is true, if Physicians had a Medical Bible, written by Divine Inspiration, containing all Things needful to be understood, believed, and practised; then, indeed, it would be a most wicked Affront to the *Optimus Maximus* Author, to doubt of the least Tittle of it; and the most flagrant Insolence in the World to pretend to amend it, by altering it, or adding human Inventions to it, and imposing them authoritatively upon the rest of Practisers.

BUT since the Nature of particular Men and Things is every where different, and Cases and Circumstances are innumerable, and therefore such a compleat System of Physic and infallible Guide never was, nor possibly could be revealed, it is plain we have no Means left, but for every one of us to fall to work, and make the best he can of his own Observations and Ratiocinations, and so be in Physic (tho' not in Divinity) a Free-Thinker.

GOD seems to delight in Variety ; and, for ought we know, no two Persons living think exactly alike in all Things ; therefore if some of my Conceptions disagree with those of others, I see no Reason why I may not, for all that, remain in full Peace with all the World of Writers.

FOR I declare, where-ever I differ in Opinion from any one, I do it not by way of perversly thwarting and fighting him, but only of producing my own Thoughts : And if such an one would but coolly consider, that I am no more opposite to him, than he is to me, and that all of us may claim a Right to give and take a Liberty of being so, we might be even again without a Quarrel.

THIS, together with what I have before said, I would have stand as an Apology for the Freedom I have taken of leaving Books, common Opinions, and vulgar Practice, where-ever it suited with my Reason so to do, and to go alone in the Paths I have beat out by myself.

AND as to the Imperfections to be met with all along throughout my Performance, I expect to be rather pitied than blamed for them ; for none can conceive what Difficulties I have struggled thro', and what Pains I have taken to patch up this Piece.

FORMERLY,

FORMERLY, when I was in my Golden Age, and lived in the Land of Light, I thought I could labour hard, and dive deep into *Democritus* his Well, and fetch up Knowledge and Truth; could penetrate into the Insides of Things; could form Notions with Ease, and express them with Pleasure.

BUT now, Time hath laid its Hands upon me, Age hath broken me, and I find my Imagination, Judgment, and Memory miserably ruined: I apprehend and think slowly; and whatever I am upon, I am forced to do it over and over before I can bring it into any Shape.

ADD to this, the Gout hath much disabled me, taking sometimes my Stomach, and sometimes even my Head.

ADD to these another most lamentable Misfortune hath befallen me; I am almost blind with Cataracts in both my Eyes, and thereby I am cut off from all my Books, and have lost all my Papers, that I had been composing and collecting from my Youth, all my Life long, and had unhappily written in an exceeding small Hand.

AND being now compelled to read and write with other Eyes and Hands, I find I can make but poor Work of it with an Anagnostes and

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Amanuensis, especially such as I can procure here in the Country.

*Da mihi Mæoniden, & tot circumspicre casus,  
Ingenium tantis exidet omne malis:*

As these, together with frequent Interruptions of Business, have made it a most fatiguing Work to get through, so they make it an impossible Thing for me to go over it again, to strike out many Repetitions, pare off Excrescencies, transcribe abundance of Particulars out of my *Adversaria*, and give all a new Turn, and a finishing Polish.

ALL which Things, if they could be accomplished, would so alter the Matter and Structure of these Papers, as to make them a vastly different Piece from what they now are.

UPON these Considerations, no reasonable Man can expect it should be a perfect Treatise, but only a rough Draught, and, as 'twere, a posthumous Work.

BUT as it is, I conceive hopes it may prove worth the Perusal, especially to such as have not yet finished their Studies, and formed a Body of Physic in their Minds; for I dare promise them, they may find sundry Things in it no where else to be met with; some of which may serve to gratify Curiosity, some to discover Errors, and some to direct Practice.

AND

AND tho' I do not pretend to inform You of any thing worth Notice, that you know not already, yet who can tell but that even some of your learned Body may light upon something in these Papers, from whence they may catch a Hint capable of being wrought up by an ingenious thinking Man into Matters of considerable Importance.

THUS I have heard, that our famous Dr. *Harvey*, in a casual Conversation with an inquisitive Country Gentleman, when he was asked what was the Use of the Heart's Motion ? told him, it was to drive the Blood forth into the Body : And being asked again what became of it there ? was startled with this (tho' so very obvious a) Question ; and from it struck up a Thought, and pursued it, and never left it till he found out the Circulation of the Blood.

AND I can almost suspect, that our celebrated Sir *Isaac Newton* might fetch the first Hint of his Notions of Attraction and Gravitation, from a little ludicrous *Spanish* Book, intitled, *The Man in the Moon*.

For *pag. 46.* it is said, “ I found by this Experiment that which no Philosopher ever dreamed of,  
 “ *viz.* That those Beings which we call heavy, do  
 “ not sink towards the Center of the Earth, as  
 “ their natural Place, but are drawn by a secret  
 “ Property

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“ Property of the Globe of the Earth, or rather,  
 “ something within the same; in like Sort as the  
 “ Loadstone draweth Iron, within the Compass  
 “ of the Beams of Attraction.”

BUT to return. Since it is now no ways in my Power to put my Book out better, a civil benign Gentleman will not, for my Good-will to Mankind, expose my Failings; and as for a malignant Snarler, I regard him not. *Ausonius* will tell him how he may know himself.

*Stultorum proprium est, velle, & non posse nocere.*

NOW to shew both the Folly and the Baseness of ill Usage towards me: Put Case a Man, after he hath been at great Expences and Pains to contrive and make a Garden, should courteously set open his Gates to all Comers, and permit them to walk in it when and where they please, and to gather Herbs, Flowers, and Fruits, whatever they had a mind to:

AND among the rest, there should one come brushing in, who should stalk, and stare, and huff about in a surly Manner, and should scrape down, and trample upon the Beds and Borders, and should take no Notice of the fine Plants, and should pry and search about for Weeds; and when he had chanced to find a Dock or a Nettle, should swear and curse, and fall out with the Gardener, and  
 fling

fling Dirt in his Face, and clamour and abuse him where-ever he came :

SUCH an one will lose all the Pleasure and Profit he might have taken, and will put himself to the Torture of a needless Chafe, and an unreasonable Quarrel, and will manifest himself to be a silly, ill-natured, abusive Fellow. I need not apply this to a malignant Fault-finding Reader.

S I R S,

THE more we study a Matter, the deeper we get into it ; and the more Particulars we consider, the clearer Notions we have of it : And therefore I think myself more a Master of my Subject now, than I was when I first entered upon it : And if I were this Day in my middle Age, and were to work it up again, I am certain I could make it a transcendently compleater Piece ; even as a Man, if he were to build his House a second Time, he could make it a much finer and better Edifice.

BUT my advanced Age, and bad Eyes (as before said) render me utterly incapable to review and amend it.

AND the Small Pox being a Matter of the greatest Concern, it meriteth the Care of the best constituted College of Physicians in the World, therefore I wish you would please to delegate one or  
more

more of your Society to dig deeper in this Mine, which I have been labouring in alone; and to order them to have their Eye more upon the public Good, than their own Glory.

FOR (as a late Author saith) to do good merely to gain Reputation, and transfer a Name to Posterity, is a vicious Appetite, and will certainly ensnare the Person who is moved by it, on some Occasions, into a false Delicacy for fear of Reproach; and at others, into Artifices that will taint his Mind, tho' they may enlarge his Fame.

AND I should like it well to oblige them to put their Names to their Performances, that it might make them careful to present us with nothing, but what they need not be ashamed to set their Hands to.

THE forbearing of this is commonly a meer cunning counterfeit Modesty; for the Authors who conceal their Names, are yet more vain than they who publish them: Both indeed may aim at your Applause; but the mock Disguise of themselves in the former, is but a more subtle Arrogance, at once to enjoy your Esteem, and the Reputation of contemning it.

NO Man that is qualified for this Undertaking, ought to be so weak-hearted as to refuse it for fear of a Scratch in his Credit. He is a poor little selfish Wretch indeed, that weigheth his Name against the Public Good.

A gallant Man (and one may be an Hero in Phyfic that faves Lives, as well as in Polemics that destroy them) will seek out, and rejoice to find Adventures, and Occasions of serving his Country, tho' he run the Hazard thereby of losing his Blood, Limbs, Life, Reputation and all, in the Action.

As for my Part, I can do no more ; and being sensible that I am not far from my Journey's End, therefore here will I make a Stand, and look back upon what is past : Upon the Review, I (to my Comfort) remember and well know, that I have made it my great and constant Endeavour, faithfully to serve and succour the Distressed, and to do whatever Good I could all my Life long.

AND now upon my going off, the ardent Desire of my Soul is to do Good when I am dead also ; and therefore I bequeath these my Labours to Posterity, without Prospect, or even Possibility of receiving from Man any Retribution for the same.

FOR there is a great Gulph fixed between the Dead and the Living, which entirely cuts off all Communication.

AND tho' the Omniscent Maker of all Things seeth every single Atom in the Universe, as perfectly and as distinctly as he doth the great Body  
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## DEDICATION.

of the Earth, and preserveth all in Being, and suffereth nothing to be lost out of the World; yet with us so it is, that when a Man doth die, he is as much lost to the Living, as a Drop of Water is that falleth into the Ocean, where it is not seen or heard of any more for ever.

THEREFORE let a Man's Life have been never so illustrious, or his Merits never so great; yet when once he is dead, Praise and Thanks can never reach him; and if they could, they would soon be forgot, and sunk into nothing.

*Ubi nunc fidelis Ossa Fabricii jacent :  
 Quid Brutus, aut rigidus Cato !  
 Signat superstes Fama tenuis pauculis  
 Inane Nomen literis :  
 Sed quòd decora novimus Vocabula ;  
 Num scire Consumptos datur ?  
 Facetis ergò prorsus ignorabiles,  
 Nec Fama notos efficit ;  
 Quòd si putatis longius vitam trahi  
 Mortales Aurâ nominis :  
 Cùm sera vobis eripiet hoc etiam dies,  
 Fàm vos secunda Mors manet.*

Worthy and honoured Gentlemen, give me  
 Leave to subscribe myself,

*Your most humble Servant,*

THO. FULLER.



# EXANTHEMATOLOGIA.

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## Of PHILOSOPHY.



HIS little Rarity was given me, written in an obscure Hand, in the Year 1676. I know not who was its Author; but it treats so pleasantly of the old and new Philosophy, and modern Inventions, that I thought it worth preserving; and have therefore thrust it in here.

“ THERE was a certain Husbandman, who occupied  
“ a Farm, with an ancient Mansion House standing in  
“ the Fields, remote from any Town; where there was  
“ an old Iron Clock, in a large wooden Frame; which  
“ had been a long while out of kelter: And because he  
“ was much troubled to know how the Time passed,  
“ that he might order his Business accordingly, he re-  
“ solved to get this Clock repair’d, and while he was  
“ considering where to find a Man able to do it, it for-  
“ tuned that a certain Peripatetick Artificer, something  
“ above the Degree of a Tinker, came that Way, and  
“ undertook to mend it. But after he had bestowed a  
“ great deal of Work in oiling the Wheels, filing the  
“ Teeth, and hanging on more Weight, and all to no

“ Purpose, at last gave it up for naught ; and told him it  
 “ could not be mended. The Farmer, partly out of  
 “ Curiosity, and partly in Hope to find out the Defect,  
 “ desired this Artificer to shew him the Nature of Clock-  
 “ work, and what was requisite to make up a perfect  
 “ Clock : He, though he knew very little what be-  
 “ longed to it ; yet being a Talkative Fellow, and very  
 “ loth to confess his Ignorance in any thing, began a long  
 “ Story, that the Nature of Clock-Work in general,  
 “ was a Principle and Cause of Motion and Rest, by  
 “ means of an inward Device, of its own Accord and not  
 “ by Chance : But this Clock having no such Nature, it  
 “ was indeed no Clock, and could not move : He told  
 “ him also, that there are Three Things go to the making  
 “ of a Clock, the Materials and the Shape, and the  
 “ want of that Shape, before it was made ; for it was  
 “ not a Clock before it was made. Now the Materials  
 “ of a Clock are Four, Iron, Wood, Cords and Lead ;  
 “ and besides these there is a Bell at the Top, that is of a  
 “ Fifth Kind, diverse from the other Four, that hath a  
 “ Trick of founding, when the Hammer strikes upon it.  
 “ Iron is a Material very black, and somewhat hard ;  
 “ Wood is very hard and somewhat white ; Cord is very  
 “ white and somewhat soft ; Lead is very soft and some-  
 “ what black. Here the Farmer interposed and told him,  
 “ he would never believe but the Iron was harder than  
 “ the Wood ; but the Clock-mender reply’d, That in the  
 “ Art of Clock-making, Softness was nothing but being  
 “ easily melted : The Farmer urged then, Iron would not  
 “ be hard at all ; but his Artificer wittily reply’d, It was  
 “ hard to be melted, he was satisfied ; the Clock-mender  
 “ went on, telling him there were other Properties also  
 “ in these Materials, derived from the former ; as that Iron  
 “ and Wood were stiff and unmoving, Cord and Lead  
 “ flexible and moving ; here the Farmer interrupted  
 “ him again, telling him the Iron Wheels moved as well  
 “ as the Cord and Lead ; and so did the wooden Hand  
 “ of

“ of the Dial ; to which he answered, They did not  
“ move of themselves as the Cord and Lead did, and  
“ that they moved only to avoid standing still, which  
“ is not to be admitted in a Clock ; but the Farmer still  
“ objected, That he saw no Necessity of any such Material  
“ as Wood in a Clock, for the same might as well be of  
“ Iron : to which he replied, It was for the Compleat-  
“ nefs of the Clock. But, quoth the Farmer, the Bell is  
“ hard and black, as well as the Iron. No, replied the  
“ Engineer, it appears only so ; but it is not so in its  
“ own Nature, but only hath a Property of sounding.  
“ Well (quoth the Farmer) you have told me the Ma-  
“ terials of a Clock, which I could have told as well my-  
“ self, but am never the wiser ; for my Jack hath Iron  
“ and Wood, Cord and Lead, and if I should hang a  
“ Bell on the Top of it, it would not prove a Clock.  
“ That’s true, said the Clock-man, for it hath not the  
“ Shape of a Clock : Now the Shape of a Clock is a  
“ certain Trick of Activity, in a Piece of Wheel-work,  
“ by the Number of Stroaks on a Bell, to tell the Hour  
“ of the Day. From this Shape there arise several other  
“ Properties, as the turning about of the Wheels ; the  
“ playing of the Ballance ; a secret Quality of the Hand  
“ pointing to the Hour of the Day, and a secret Agree-  
“ ment between the Hand of the Dial, and the Hammer  
“ of the Bell ; for as often as the Hand points to any  
“ Figure, the Hammer strikes just so many Strokes upon  
“ the Bell. There is also a hidden Disagreement between  
“ the little Weights, and the great ones ; for as fast as  
“ these go down, those go up. There are also some  
“ Clocks of another Kind, some with an Alarum, to waken  
“ a Man at a certain Time of the Night ; some have  
“ Chimes to play certain Tunes upon Bells : There are  
“ also imperfect Clocks, call’d Watches, that do not strike ;  
“ but only have a Dial with an Hand turning round ;  
“ there are also Sun Dials, that tell the Hour of the Day  
“ by Shadows : But these are imperfect Clocks, and not  
“ com-

“ compounded of all four Materials. He also reckoned  
 “ up a great many famous Clock-makers of several Coun-  
 “ tries, that he had learnt his Art of ; as also how many  
 “ Clocks he had mended ; and concluded with the Praise  
 “ of *Vulcan* and *St. Eloy*, and the whole Art of Smiths  
 “ Work.

“ WHILE they were thus discoursing, in comes a  
 “ Clock-Smith of the next Town, who thought him-  
 “ self as well read in Clock Philosophy, as he that had  
 “ read this long Lecture ; who therefore began to move  
 “ many Controversies ; as, that Clocks might be made of  
 “ other Materials, *viz.* Steel, Brass or Silver, where, by  
 “ the Way, they digressed into a long Dispute, whether  
 “ Steel and Iron differed in Kind or in Degree only ;  
 “ that a Bell was not any fifth Kind, but made up of  
 “ a Mixture of other Metals ; that there were not four  
 “ Materials of a Clock ; but that it might be made up  
 “ of one or two of them ; that Cords and Plummets were  
 “ no necessary Parts of it ; for it might be moved by a  
 “ Spring without them : And many more Questions they  
 “ disputed about, till they were both weary.

“ THE Farmer's Son, who was newly come from the  
 “ University, where he had been a Year or Two, and  
 “ had read *Magirus*, was much taken with these learned  
 “ Lectures of an ordinary Mechanick ; and began to suspect  
 “ he was some disguised Scholar ; in that he had so phi-  
 “ losophically begun with the Definition of Nature *Prin-*  
 “ *cipium & Causa motus & quietis ejus in quo est primo, &*  
 “ *per se, & non per accidens* : Then proceeded to the  
 “ three Principles, Matter, Form and Privation ; after  
 “ that, to the four Elements of a Clock ; with their Pri-  
 “ mary and Secondary Qualities, and was well-pleased  
 “ with his Judgment, in making the Bell a Quintessence ;  
 “ and to contain the Elementary Qualities, not formally  
 “ but eminently ; and that Softness should signify Liqua-  
 “ bility,

“ bility, answered juſt to Humidity ſignifying Fluidity ;  
 “ and that it was as eaſy to excuſe the Iron from melting,  
 “ as the Fire from Fluidity : He thought alſo, that he  
 “ diſtinguiſhed well between natural and violent Motions,  
 “ and took Notice how *evitatio vacui*, & *complimentum*  
 “ *Univerſi* did him Knight’s Service : So likewiſe he de-  
 “ fined the Form of a Clock very well, *actus primus*  
 “ *corporis artificialis organiſati motum habentis in potentia* :  
 “ And he believed a Trick of Activity was as good an In-  
 “ terpretation of *εὐτελεχία*, *perfecti habeo*, which *Hermolias*  
 “ *Barbarus* learn’d of the Devil : The Qualities did ad-  
 “ mirably well flow from the Form, eſpecially the occult  
 “ Quality in the Dial, and its Sympathy with the Bell, as  
 “ alſo the Antipathy of the greater and leſſer Weights ;  
 “ he alſo ſhewed the ſeveral Species of Clocks ; whether  
 “ perfectly or imperfectly mix’d ; how Watches had only  
 “ a material vegetative Soul, the Alarum ; and Chimes  
 “ reſembled a Rational ; but the ordinary Clock was of  
 “ the Order of ſenſative Creatures, and he had excellently  
 “ well deſcrib’d the Nature of the Beaſt. He ſeem’d to  
 “ be well read in the School Tinkers, had ſhew’d that  
 “ *Vulcan* was antienter than *Ariſtotle*, and *St. Eloy* as great  
 “ a Maſter of Clock-work as *St. Thomas* ; only the Clock-  
 “ ſmith (he thought) made foul Work, and went as much  
 “ beyond him, as *Carpenter* and *Pemble* the more ortho-  
 “ dox *Magirus* : And yet ( he ſaid ) he might have  
 “ mov’d a great many more perillous Queſtions, as  
 “ whether the Hammer were the Intelligencer of the Bell,  
 “ and conſequently whether *forma informans* or *aſſiſtens* ?  
 “ Whether the Bell did act upon the elementary Parts of  
 “ the Clock, or they upon the Bell ? Or if the former,  
 “ whether it do it by the Blackneſs, or its Hardneſs, or  
 “ its Sound, or by certain Influences ? And then whether  
 “ the Forms of the Materials did remain in the Clock in-  
 “ tire, or refracted ; or a fifth Form reſulting from them  
 “ all ? And whether it were a ſubſtantial or accidental  
 “ Form together. A Clock or a Watch were ſpecifically  
 “ or

“ or gradually distinct? With many more which he forbore to mention, as he told them, because they could not understand them.

“ ALL this while the Landlord was in the House to take Order about some Reparations ; who being an ingenious Gentleman, that had used to take in Pieces his own Watch, and set it together again, and therefore could not be ignorant of the Fabrick of a Clock, having with much Patience heard all this Jargon, at last deliver'd the good Man (who tho' no Fool, yet was never the wiser for all this Discourse) from the Impertinences of the Clock-mender, and the young Philosopher ; shewing him, that the Cause of Motion was in the Weights, which, by the Multiplication of indented Wheels and Nuts, was so moderated, that the last Wheel, to the End of whose Axel the Hand was fix'd, was just twelve Hours in turning about ; and that there were in every twelfth Part of the Wheel, certain Pegs that lifted up the Holdfast of the Hammer, which, by the Motion of other Wheels and Springs, would be made to strike several successive Strokes upon the Bell, 'till the Holdfast catch in the next Notch of a Wheel indented at several Distances, according to the Number of Strokes at each Time to be struck : He shew'd him also, that the Teeth of the great Wheel were so worn, that it would not answer to the just Proportion of Time it should move in, and therefore he must get a new one made : In fine, he taught him how the Motion was deriv'd from Part to Part, so that he thoroughly understood the whole Fabrick, and could be able to rectify any ordinary Fault that should happen in it. But the Son all this while, being as inept at understanding Things, as apt, Parrot-like, to catch at Words, was dissatisfy'd that he should take no more Notice of the substantial Form and Qualities of a Clock ; and told  
“ him,

“ him, that he rejected Principles, and therefore he would  
“ not dispute with him.”

How far the Clock-mender's Discourse resembles the Scholastic Philosophy, or the Gentleman's the Atomical, let others judge: I shall only propound this general Query, Whether it be any better Philosophy to say, that Nature makes the Fire to burn, or that it is an inward Principle of Gravity in a Stone that makes it fall down, than it would be mechanical Skill to say, that Art makes the Clock strike; or to say, that some inward Device makes the Hand of the Dial move? For as Art is to Artificials, so is Nature to Naturals; and may be he spoke more truly than he was aware of, that call'd it *Ars Dei*. Then certainly it must be the Office of Philosophy to find out the Process of this divine Art, in the great *Automaton* of the World, by observing how one Part moves another, and how those Motions are vary'd by the several Magnitudes, Figures and Positions of each Part, from the first Springs or Plummets (as I may say) to the Hand, that points out the visible and last Effects. This, Physicians have taken the Boldness in part to do in those little Watches, if I may so call them, the Bodies of Animals; and *Des Cartes* hath proceeded farthest in the like Attempt, in that vast Machine the Universe; with how good Success, others are better able to judge. But this I dare boldly say, it was a noble Effort; and if he had wholly fail'd in it, he would have been more pity'd and less envy'd.

THIS farther I shall add in the behalf of new and free Philosophy, that the Theatre of Nature is much enlarg'd since *Aristotle's* Time; and there is no Part of the World, wherein there are not some notable new Phænomena lately discover'd, that must needs be of great Account in natural Philosophy; for in the Heavens, by the Help of Telescopes, (a new Invention) there are found an innumerable Company of fix'd Stars unknown

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to the Antients ; and among the Planets the *Anfulæ* of *Saturn*, and four Moons about *Jupiter*, were never heard of 'till *Galilæo's Nuncius siderius* brought the News ; the various Phases of *Venus*, (and other Planets) as also her being sometimes on this Side the Sun, sometimes beyond, were the Suspicions of the *Pythagoreans* of old, and the certain Knowledge of latter Times, but not agreeable with *Aristotle's* Doctrine. Mountains and Vallies in the Moon were never seen before this Age ; and no body will now venture to deny but that she is as Opaque as the Earth, and borrows as much Light from it as she lends : That the Sun is full of scummy Spots, continually generated and destroy'd, and that he turns round upon his own Axis, they that will not trust *Schiner*, may be inform'd by their own Eyes : The appearing of new Stars, and disappearing of old, was not consider'd by the Antients, nor their appearing sometimes bigger, sometimes lesser : That the Comets are above the Moon, and the Heavens fluid, since *Tycho* few Men have doubted, and therefore *Aristotle's* Intelligencers that mov'd the solid Orbs, have leave to play ; and since that arched Roof is gone, I know not how the Elementary Fire will be kept in. But if it should chance to prove true (and who knows what Posterity may believe, since we have been so hardy as to admit Antipodes?) that the Earth is a Planet, and the Sun a fix'd Star, and by consequence every Planet an Earth, every fix'd Star a Sun, it would make foul Work in the vulgar Philosophy.

BUT let us descend upon the Earth, where we shall find Dr. *Gilbert*, instead of the *Oxford Fryar's* Great Black Cock at the North Pole, hath persuaded all Men that the whole Earthly Globe is a Magnet ; and tho' the Antients knew no more of the Loadstone than its Coition, which they improperly call'd Attraction, we now find it to be no less remarkable for its polar Direction, (not without some Variation in several Places) as also its various Inclinations,

tions, according to its feveral Distances from the Equator and Poles; but the Nature of the Loadstone can scarce be unknown, since we have seen the Circles of the Dust about it. The distinct History of the Flux and Reflux of the Sea is also amongst the *Nova inventa*. The Antients overlook'd the most luciferous, tho' obvious Experiment of the Sling; nor did they know what Use to make of the Crystal Prism. They were over-careless Spectators of the Rainbow; the Rosy-figured Particles of the Snow escap'd their Sight. But it were infinite to pursue Particulars: I will not stand to reckon up the several Discoveries we are beholden to the new-invented Microscope for, nor shall I insist upon the many Chymical Experiments that are of use in Philosophy: I pass by the wondrous Effects of Gunpowder, nor shall I mention the Discoveries of the Air-Pump, lately exhibited to the World by that noble Gentleman; or the ingenious Experiments of *Galilæo*, Lord *Bacon*, and many others.

I SHALL only touch upon one Topic more, which is the Improvement of Anatomy, and the Knowledge of the Fabrick of Animals. No Man thinks himself bound to believe, that the Nerves are deriv'd from the Heart, and by Consequence, that to be the Seat of common Sense, because *Aristotle* tells us so; nor yet, tho' he could tell us no such Thing, to disbelieve the Circulation of the Blood found out by Dr. *Harvey*: What should I mention those learned Observations of the same Author concerning the Generation of Animals! I omit *Asellius* his *Vena lactea*, as also the *Ductus Chyliferus*, *Vasa Lymphatica*, with many more of the like Nature, which do as much alter the Face of the lesser, as those other before rehearsed of the greater World.

MUST we now, after all these, and many more Discoveries about natural Bodies, confine ourselves to what we find in *Aristotle*, who never dream'd of any such

Things? Is it possible that so many new Appearances should not alter the Frame of Philosophy, nay rather hazard the pulling down of the old ruinous House that had too narrow Foundations, that it may be built again with more Magnificence? Since we find daily Generations and Corruptions in the Heavens, and that the Stars themselves are not free from that Fate, how can we satisfy ourselves with the Four Elements of *Aristotle*, or the Three Principles of the Chymists, which, at best, can be but the Ingredients of Terrestrial Bodies; besides, that they are not so simple as to deserve those Titles? And truly, to them that have once tasted of the mechanical Philosophy, Forms and Qualities are like to give as little Satisfaction, as the Clock-mender did to the intelligent Gentleman in the Story I before told you.

No Man would be so ridiculous, as since *Columbus* discover'd the new World of *America*, as big as the old, or since the enlarg'd Knowledge of the North of *Europe*, the South and East of *Asia* and *Africa*, besides the new Divisions, Names, and Inhabitants of the old Parts, to forbid the Reading of any more Geography than is found in *Strabo* or *Mela*; or since the *Portuguese* have sailed to the *Indies* by the *Cape of Good Hope*, to admit of no other *Indian* Commodities than what are brought on Camels to *Aleppo*; or if Posterity shall find out the North-East or North-West Way to *Cathajo* and *China*, or shall cut the *Isthmus* between the *Red Sea* and *Mediterranean*, will it be unlawful to use the Advantage of such noble Atchievements? Why then must Philosophy alone be bound up still in its Infant swaddling Bands? and there being the same Reason, why should we not allow the same Liberty of expatiating? If any Man love Acorns since Corn is invented, let him eat Acorns; but 'tis very unreasonable he should forbid others the Use of Wheat. Whatever is Solid in the Writings of *Aristotle*, these new Philosophers will readily embrace, and they that are most  
accused

accused for affecting the New, doubt not but they can give as good an Account of the old Philosophy, as their most violent Accusers, and are probably as much conversant in *Aristotle's* Writings, tho' they do not much value those small Wares that are usually retail'd by the Generality of his Interpreters.

BUT methinks I hear some Men say, All Innovations are dangerous ; Philosophy and Divinity are so interwoven by the Schoolmen, that it cannot be safe to separate them : New Philosophy will bring in new Divinity ; and Freedom in the one, will make Men design a Liberty in the other. The very same Argumentation the Presbyterians used when they bore Rule in the University, and the new Philosophy was interdicted in some Colleges upon that Account. But what was the Event ? it was so much the more eagerly study'd and embrac'd. There was a Time when all Learning was upon the same Pretence discountenanc'd, *Græcè nosci suspectum erat, Hebraicè, plane hæreticum* ; and there was a College in *Cambridge* that shut their Gates against the *Greek* Testament : But all their Endeavours were but vain ; they might as well have hindred the Sun from rising, or being up, from filling the Horizon with Light : Learning and Knowledge will break forth like Fire, and pierce like Lightening thro' all Impediments : Politeness and Elegancy have long ago subdued monastic Barbarism : *Erasmus* and *Melancthon*, with the rest of those Restorers of Learning, have made *Holcot* and *Bricot* quite out of Fashion ; and the inquisitive Genius of later Years, like a mighty Wind, hath brush'd down all the Schoolmens Cobwebs. There is an infinite Desire of Knowledge broken forth in the World, and Men may as well hope to stop the Tide, or bind the Ocean with Chains, as hinder free Philosophy from overflowing ; it will be as easy to satisfy Mens corporal Appetites with Chaff and Straw, as the Desires of their Minds with empty Words and Terms. The Church of *Rome* quickly

quickly saw her Error in this Point, and forbore to strive against the Stream ; for when she perceiv'd that Learning would be in Fashion, she presently sent her Children to School ; and who so great Scholars in all Kinds as they ? And she hath been so wise ever since, that there shall be no Piece of Learning, but some of her Sons shall be Masters of it ; and if they will but give her respectful Words, they may be as free Philosophers as they please ; and I dare say, she would take it very ill, if any one should deny *Des Cartes* or *Gassendus* to be hers : *Galilæo* indeed fell under Correction for holding the Motion of the Earth ; but the true Crime was, his abusing his Holiness in his Dialogues under the Name of *Simplicius* ; for others have with Impunity adventur'd on as great Paradoxes, but they had the good Manners to make a Leg and say, *Omnia Ecclesiæ Authoritati submittimus*.

I WILL never therefore believe that the Church of *England* can be more stingy than the Beldame of *Rome* ; but will do that of Choice, the other doth of Necessity : True Philosophy can never hurt sound Divinity : The Christian Religion was never bred up in a Peripatetic School, but spent her best and healthfullest Years in the more religious Academy amongst the primitive Fathers ; but the Schoolmen afterwards ravish'd her thence, and shut her up in the decay'd Ruins of *Lyceum*, where she serv'd an hard Servitude, and contracted many Distempers : Why should she not at last be set at Liberty, and suffer'd to breathe in a free Air ? Let her alone to be Mistress, and chuse her Servants where she best likes ; let her old loving Nurse the Platonic Philosophy be admitted again into her Family : Nor is there any Cause to doubt, but that the Mechanic also will be faithful to her, no less against the open Violence of Atheism, than the secret Treachery of Enthusiasm and Superstition, as the excellent Works of a late learned Author have abundantly demonstrated ? Nor will it be possible otherwise to free Religion from  
Scorn

Scorn and Contempt, if her Priests be not as well skill'd in Nature as the People, and her Champions furnish'd with as good Artillery as her Enemies. How shall the Clergy be able to maintain their Credit with the ingenious Gentry, who begin generally to be acquainted with the Atomical Hypothesis, and know how to distinguish between a true Gem and a *Bristol* Diamond? Or how shall they encounter with the Wits (as they are call'd) of the Age, that assault Religion with new Kinds of Weapons? Will they acquiesce in the Authority of *Aristotle* or *St. Thomas*, or be put off with *contra negantem principia*? Let not the Church send out her Soldiers arm'd with Dock Leaves and Bulrushes to encounter Swords and Guns; but let them wear as good Brasses and Steel as their Enemies, and fight with them at their own Weapons, and then having Truth and Light on their Side, let them never despair of Victory.

S I R,

Yours, &c.

S. P.



### Of the BLOOD.

**W**HILE it circulates in the Body, it appears like an homogeneous Liquor ; but when it is let out into a Porringer, as it groweth cool, it separates into its constitutive Parts : which I take to be, 1<sup>st</sup>, *Spirits* ; 2<sup>d</sup>, *Serum* ; 3<sup>d</sup>, *Gore* ; 4<sup>th</sup>, *Fibres* ; 5<sup>th</sup>, *Size*.

### Of the SPIRITS.

**T**HEY are the minuteſt Atoms, and ſubtileſt Matter, that the Blood can poſſibly be elaborated into by the Operation and Help of Animal Warmth, Diſteſtion, Agitation, Collifion, Percolation, Cohobation, and Admixture with fine *Æther*.

How high Nature (that is God's Art, as I may ſay) may work them up, we can make no Eſtimate ; perhaps they may be finer than the Effluvia of the Magnet ; perhaps more ſubtle than the Particles of Sound, and even of Light itſelf.

FROM the never-ceaſing Motion and Evaporation of Spirit of Sal Armoniac, we may frame ſome Notion of the Activity and Agency of our Spirits.

FROM the Particles ſtruck off between a Steel and Flint, which whirl with ſuch a Pernicity as to become Fire, we may conceive ſomething of their Rapidity and Heat.

THEY

THEY are Vital and Animal; the first reside in the Blood and carnous Parts, the other in the Brain and nervous Parts.

*Of the VITAL SPIRITS.*

THESE are first begun to be made in the circulating Mass of Blood by the Operations abovesaid; but they are render'd expansible, volatile, and are perfected in the Lungs by Conquassation and Admixture of pure Elastic Æthereal Air.

As the Blood is the Life of the Animal, so are the Vital Spirits the Life of the Blood.

ARISTOTLE somewhere saith, the Blood is of its own Nature cold: As I understand him, he means it is cold as Water is cold; which is always so, unless when heated by Fire (or something analogous) mix'd into its Body, and putting its Particles into such a Motion as causeth Heat; and whenever those calorific Particles are gone out of it, it grows cold again, as it was before.

Now that which as the efficient Cause gives Heat to the Blood, is only the Vital Spirit; and proportionably to the Degrees of its Action and Impetus, the Heat of the Blood is more or less.

BUT as all Sorts of Subjects set on fire do not produce a like Heat; as Straw yields not so fierce a Fire as solid Wood; and boiling Water is not so intensely hot as melted Lead; so the more the globulous and solid Parts abound in the Blood, the hotter it may be made; and the more mucilaginous and thick it is, the longer it will retain its Heat.

THAT the Blood hath no proper Heat of its own, but receives it all from the Spirit, plainly appears by this, that when it is let out of a Vein warm into a Porringer, as the Vital Spirit evaporateth, it groweth as cold as the ambient Air is.

HEAT is the gentle friendly Mication which gives that intestine Motion of Parts that makes Liquidity and Briskness, and keepeth all its Elements in Mixture and Equability ; fits the Mass for Circulation ; causeth Digestion, Sanguification, Distribution, Nutrition ; and mainly contributes to Depuration, and the throwing off of heterogeneous Matter of Recrements : And lastly, they afford Matter for the Animal Spirits to be distill'd and rectify'd out of.

IF the Blood, by Reason of its Poverty, some great Sickness, or enormous Evacuation foregoing, be not able to furnish out a sufficient Penus of Spirits, the Vital Functions will suffer, and be but indifferently perform'd ; and also the Animal Spirits will fail for want of a due Supply.

THEY being inconceivably subtile, volatile, and dissipable, continually evaporate, and suffer great Wastes ; and are in Time of Health proportionably recruited and repaired by new ones daily produc'd in the Mass of Blood.

WHEN they are much spent and flown, if the Occasion of it was only Labour, and great Evacuations, and the Party at the same Time be pretty well, and his Vital Functions continue to be not ill perform'd, he will soon breed more Spirits, and be repair'd again.

BUT if this be greatly wasted by a Fever, or other Illness, and Sanguification be hurt and deprav'd, they cannot be rightly supply'd with fresh ones, 'till Nature  
does

does at length recover, and restore the Vital Functions, which cannot be in a short Time.

WHENEVER they are much irritated, they fly into explosive Disorders, and raise preternatural Commotions in the Blood, and are the efficient Cause of all Sorts of Fevers.

IF they rage impetuously, sharp Symptoms arise ; if they fail, the Fever is long and hazardous ; and if they are quite spent or conquer'd, Nature gives out, and Death follows.

IF in Fevers, because of disagreeable, and especially malignant and venomous Mixtures, they are driven into furious Exorbitances, then they will impart a like Effect upon the Animal Spirits, and will cause and occasion such Diseases and Symptoms, as the Brain and Nerves are capable of, and liable to.

### *Of the* ANIMAL SPIRITS.

THEY are so call'd because they perform muscular Motion, Sense, Perception, and all the Animal Functions and Faculties ; and are not Æther, but the Vital Spirits distill'd, rectify'd, and filter'd.

FOR when the Vital are brought by the Blood thro' the carotid and cervical Arteries, into the Laboratory of the Brain, and that consisting of the incomparably minutest Fibrillulæ, and exquisitest Texture of any Thing in the whole Body, suffers none but the very purest Quintessential Atoms to enter into the Glands and Tubules of its Cortex ; and all the rest, which is not so fine, flows back, and returns into the Veins again.

AND this Colation of the Vital Spirits thro' these Fineneffes, doth so depurate and refine them, that they become as subtile, expansive, and agile, as even the very purest *Æther*; and perhaps are as much finer than the Vital, as those Particles which constitute the Light of the Sun, are than those which cause the Heat.

THUS as the Lungs (which I shall say in its Place) perpetually new make the Blood and Vital Spirits; so the Brain new makes the Animal Spirits, and sends them thro' the Nerves into the Membranes and Muscles; some of which it is probable are stationary, and reside in the nervous Fibres; and others are sent forth and back upon the Occasions of Sense and Motion.

AND when they have done their Business there, those of them which are not evaporated and spent, run into the general Mass of Blood again, where, having taken up gross and foul Copula, they are new mix'd up in the Lungs, and made Vital; and after that, are distill'd off in the Brain as before.

AND thus as there is a Circulation of the Blood, so is there of the Spirits likewise.

### *Of the SPONTANEOUS SPIRITS.*

I Am gotten into an Opinion, that besides the Vital Spirits residing in the Province of the Blood, for the Use of the Vital Functions; and the Animal in the Nervous, for voluntary Motion; there is a third Sort (as Dr. *Willis* believes) in the Cerebellum, for the Spontaneous Motions of the Heart, Lungs, and Intestines.

PERHAPS these may be no other than Animal Spirits sent out of the Brain into the Cerebellum, to be there  
new

new drawn off and rectify'd, and form'd and fitted for their proper and peculiar Operations.

HOWEVER, that they are a perfectly distinct Sort, must of Necessity be allow'd, in regard, that whereas the Animal Spirits, upon hard and long Duty, will grow tired and weary, and require Cessation of voluntary Motion and Sense, and must have Rest and Sleep, in which Time they are chiefly recruited again with fresh Supply from the Vital; these never sleep at all, tho' they may be sometimes stopp'd, especially in Apoplectic or other Fits.

ALSO, this farther seems plain from hence, that oftentimes where the Animal Spirits fall into great Disorders, and stop, as in Phrenzies, Convulsions, Palsies, these notwithstanding shall go on as they used to do, and continue the Spontaneous Peristaltic Motion of the Intestines, and that of Pulsation and Respiration, by themselves.

NOT but that they have so much Dependance upon the other Spirits, as to admit of Alterations from their different State, Sufferings, and Actings.

THIS is manifest; for we see that Pulsing and Breathing are accelerated, retarded, or some way or other perverted or alter'd, by running one's self out of Breath; by great Ebullition and Heat of the Blood; by noxious febrile Matter giving Offence in its Passage thro' the Heart and Lungs.

BUT above all, if the Animal Spirits be so far exhausted or perverted, as not to be any longer able to furnish out a sufficient Supply for these, then the Motion of the Machine stopping, Vitality and Animality cease.

NOW as the others are call'd Vital and Animal Spirits, so these, because they are always upon constant Duty,  
and,

and, as long as the Animal hath Life in it, are perpetually streaming forth from a never-failing Spring, might be term'd *Perennial*; but in regard that they receive not their Orders from the Will, but act of themselves, I think fit to call them *Spontaneous* Spirits.

### Of the SERUM.

**I**T consists of two distinct Parts, namely, the Potulent and the Lymphatic.

THE first is no elementary Part of the Blood, but is only that which is taken in by drinking, and is not by Nature's Appointment to continue long in it; for when it hath serv'd the Purposes it was design'd for, it passeth out again by Urine, Sweat, insensible Transpirations, &c.

ITS Uses are, to quench Thirst, abate Heat and Drought in the Mouth, Oesophagus, and Stomach; to moisten the Food; to render the Mass of Aliments, when subacted, thin, and fit to be percolated into the Lacteal Vessels, and pass into the Blood; and there to dilute it, and hinder the Globuli from clustering together and coagulating; and to be a Vehicle for Salts, for the liquifying and carrying them, together with other ill Matters, off by the Breath, urinary Passages, and the Pores of the Skin.

THE other Part is the Lympha, which the conglobate Glands strain out of the Blood into the Lymphatic Veins, and they pour it into the Mass again thro' the Subclavian Vein.

IF the Lymph be heated over the Fire, it will be turned into a thick Colostrum, like the Whites of Eggs fry'd, and not evaporate away so much as Urine and Sweat will do, which contain a greater Proportion of the Potulent Part.

HOWBEIT,

HOWBEIT, tho' these two be different in Nature, yet because they are so united as to appear in one uniform Liquor, and perform many Offices together jointly, I shall not here divide them, but treat them as tho' they were but one, by the Name of *Serum*.

IT giveth the Mass of Blood Liquidity and Mixture, and such a fluid Consistence, as fits it to flow freely thro' the minutest and remotest Pipes and Passages of the Vessels and carnous Fibres, without Stagnation, Obstruction, or undue Separation of Parts.

IT restrains the distemper'd Effects of the Vital Spirits, intervenes between the Globuli, and hinders them from Coalition and Febrile Conflagration.

IT is the proper Menstruum for the last and finest Dissolution of Chyle, and Distribution of Aliment into all the inmost Recesses and smallest Vacuities it is to be carry'd into.

IT is of necessary Use for the Extrication and Separation of either worn out, effete, or noxious Recrements : And these are specifically, mechanically, and, as it were, electively perform'd, according to the different Fibres, Contextures, Configurations, Convolutions of the Glands and Strainers, whose Pores are adapted to receive and transmit such Particles only, as, when they come together, constitute a peculiar Species of Liquids, as Urine by the Kidnies, Sweat by the Cutaneous Glands, Bile by the Liver, &c.

FOR it is in Animals as it is in Vegetables, the Percolatory giveth the Specificallness to the Matter percolated. Thus we see a Crab Stock maketh Crab Juice, as far as its Body goeth ; but where it is grafted, that Graft alters that which was up to that Place Crab, into Pippin, or some other determinate Apple, according to the particular Figure and Size of the Pores of that Graft.

IT

IT moistens and lubricates the Fibres of all Sorts, and keeps them supple and slippery, extensile and contractile, without which they could not perform their Motions and Operations.

IT is the Receptacle and Vehicle of all Animal Salts. When it is over season'd with muriatic Salt, it occasions Scurvy, Catarrhs, Coughs, Consumptions, Putrefactions, cutaneous Eruptions, Ulcers, &c.

WHEN heterogeneous, disproportion'd, malignant, or venomous Corpuscles are either bred in it, or brought into it, it is the Cause of Fevers, putrid, malignant, contagious, or pestilential.

WHEN the Serum is disproportionate, and abounds too much, it causeth Coldness of Constitution, Thinness and Poverty of Blood, Rheums, Dropsies, Chlorosis, and Tumours by Congestion.

WHEN it is not plentiful enough, (especially the Lymphatic Part) there follows Thickness of Blood, Obstructions, Inflammations, hot dry Constitution, hectic Fever, and Atrophy.

AND in that Case, drinking plentifully of any Sort of Liquor whatsoever, tho' it pour Moisture into the Vessels, yet that will in no wise supply the Want of Lymph; for the potent Part (as said before) being no constituent Part of the Blood, mixeth not intimately so as to become one uniform Body with it; and when it hath a little superficially diluted the Mass, and washed out the Vessels, it forthwith runneth out of the Body again.

HENCE it may appear, why Diaphoretic and Diuretic Medicines, tho' they may provoke Sweat and Urine plentifully enough, yet very often signify little towards the discharging

discharging the Blood of such Maladies as are seated in or occasion'd by the Lymph ; for such Medicines act not so much upon the Lymphatic Element, which is a real Part, and cannot be without Difficulty separated, as upon the Potulent, which, only swimming in it, and not intimately mixing, may easily be driven off.

BUT in Febrile Distempers, where the morbose Matter is got no further than the Lymph, and hangs but loosely in it, Nature generally can separate and expel it without any troublesome Symptoms or Ebullition. An Example of this is the Crystalline Small-Pox.

### *Of the GLOBULOUS PART.*

IT is that Part which in a Blood-Porringer settles into a clotted Mass, and is chiefly composed of Globules.

THE Nature of these Globules is such, that whenever they come to touch, they run into one another, and join as Particles of Quicksilver do.

AND they may be subdivided into almost infinite little ones, even till they lose their Colour ; and by this Means become capable of passing thro' the Arteries, Veins, Interstices, Muscles, Fibres, Glands and Strainers, be they never so minute : Nay, they can pass where even the Air cannot, as hath been proved by two Experiments in *Philosophical Transactions abridg'd*, Vol. III. p. 208.

THE Exiguity of these Globules is astonishing, and cannot well be estimated ; but *Leewenhoeck*, in his *Epistle to Aston*, finds by his Method of Computation, that a common Globule, such an one as tinges the Blood, is a Million of times less than an ordinary Grain of Sand. And in his *Epistle to the Royal Society*, p. 175. he saith, (I think he means not a common bigger Sort of Globule,

H

but

but such an one as hath undergone many Divisions) “ The  
 “ Globules that make the Blood red are so small, that  
 “ *Centena Myriadum Millia*, an Hundred Thousand Millions  
 “ are not equal in Bulk to a pretty large Grain of Sand.

THAT they are actually divided into such very small ones, as to lose their Redness, appears in the Matter of Blushing, where the Face that was without Colour, by Reason of the Exiguity of the Globuli and Vessels, flusheth into a Redness, when Shame hath forced the Spirits into it, and they the Blood; whereupon the Globuli joining, become larger, and the Vessels more conspicuous.

BECAUSE these Globuli are heavier than the Serum, and sink down in it, I take them to be not hollow Bubbles, but solid *Moleculæ*, which consisting of soft Pulp equally yielding on all Sides, are therefore capable of receiving any Figure, according as the Limitation of ambient Bodies giveth Shape: but are, when free from Pressure, spherical; as a Drop of Water, or other Liquor, when left to itself, runneth naturally into a Globule, or round Figure.

THESE Globuli take not their Colour from any thing, but are of their own Nature red: and all the Redness of the Blood and Body is owing wholly to them; but when they are kept from the Air, and compress one another, and join together in *Thrombs*, they lose their Floridness, and look blackish, as is to be said hereafter.

IT is these that give the Blood its main substantial Richness, and (by the Agency of the Spirits) Heat; they, as it were, hatch, and breed, and conserve the Vital Spirits. These mix with the Chyle, when brought into the circulating Mass, and digest and work it up into perfect Blood: And they afford the Matter of Nourishment to all those Parts that are properly Flesh, or car-nous Parenchyma. When the Blood is not sufficiently  
 stored

stored with these, it is crude, cold, pale, poor, unfit to warm and nourish where it flows. It is also unable to separate Heterogeneities, and throw off Recrements: whence are occasion'd a sickly Constitution, Weakness, Cachexy, Dropsy, Menstruum Carentia.

WHEN the Mass is disproportionably over-stock'd with them, they make an hot feverish Constitution; and when upon any Occasion they are loosened from their Mixture with the other Elements, or are irritated by disagreeable Matter got in among them, and so running together in Combinations, grow exorbitant and turgid; they then (by the Help of the Spirits) exagitate the whole Mass, and make it boil vehemently, and so produce Inflammations, Fevers, Hæmorrhagies, and Disorders in the Head, Lungs, Stomach, Viscera, &c.

WHEN a Quantity of Febrile Matter is gotten in among the Globuli, they will rise up against it with Heat and Hurry, either to subdue or expel it; and according as the Nature of that Matter is, benign, malign, or virulent, such a Fever respectively will they produce.

IN pestilential, or other venomous Fevers, when the poisonous Particles have ruined the Crasis of the Blood, and so broken the Globules into their Minima, that they cannot be contained in the Vessels, those broken Globules will either come out in the Skin in Spots, or in great red Flushings, or produce Hæmorrhagies.

WITH leave I mention this by the bye: I have seen Countrymen, at the Death of a Buck, drink a good large Draught of his warm, and, as yet, live Blood, for the Cure of a Jaundice: Perhaps it may, in that impoverish'd State of Blood, bring in a Supply of fresh Globules, and renew it, and be a Sort of Transfusion of Blood.

I CONCEIVE each primary Globule, as it swimmeth in the bigger Vessels, is comparatively a large one, made up of many secondary little ones.

ALWAYS when it cometh to minute Pipes and Pores, it breaketh into such little Secondaries, as are small enough to enter and pass thro'.

AND when they come again where there is Room enough, they run together and unite, (as small Drops of Water do into greater) and become such large Primaries as they were before.

AND without this constant dividing and uniting of Globules, according to the Wideness or Narrowness of the Passages, Obstructions would every where happen, and Circulation could not proceed as it must do, to continue Health and Vitality : But sometimes a Fever will boil up their Pulp into such a solid and firm Consistence, that they cannot break and divide so much as is requisite.

SOMETIMES it will so break the Bonds of Union, that they will fall asunder, as well in the larger Canals, as smaller Rivulets, and so harden the Secondaries that they can scarcely unite again ; and so the Blood becomes a fluid uncongealable Mass, which is that which is called Putrid.

SOMETIMES when an ardent Fever is kindled up by very inflammable Matter, it will scorch, and, as 'twere, calcine the pulpose Corpuscles into something like Cinders and Ashes, and so render the Mass of Blood adust, and foul it with acrid Fæces.

BUT when a Fever is caused by Matter that is exceedingly hostile to Nature, especially if it be of a true venomous Kind, its Particles may tenaciously fix upon the Secondaries, Atom for Atom ; and with them form such  
ferine

ferine Molecularæ as will fire and tear where-ever they go. And at the same time being utterly unfit to pass along in the common Streams, will break out of the Bounds of Circulation, and rush either into the inward or outward Parts in little Spots, large Efflorescencies, Pustules, Tumours, inflammatory or other Sorts.

*Of the FIBRES.*

**I**F Blood be let out of a Vein into warm Water, or a Clot of fresh Gore be washed in it, so as to have its red Globules separated from it, innumerable small white Fibres will come to light, swimming in the Water, and, if kept quiet awhile, will sink and fall to the Bottom.

As the Globules give the Blood its Richness, so these Fibres give it Firmness and Strength; for they knit the Elements together, and hold up Consistence: Also they afford alimentary Supplies to all the nervous fibrous Parts, Membranes and Bones.

IF they are too many in Proportion to the other Principles, they take off something from its Fluidity, and hinder its Current, especially if they be boiled up together with the mucilaginous Part into a Size, which is the Case of inflammatory Fevers; for in those Cases their congealed Portions, fixing and stagnating in the Extremities and Streights of the capillary Vessels and Interstices, obstruct Circulation, and produce Extravasation, as in Quinzies, Pleurifies, and muscular Rheumatisms, &c.

THE Reason why letting of Blood avails so greatly in such Cases, seems to me (besides Inanition and Resorption of extravasated Blood) to be from the lessening the Quantity of these Fibres, (for in these Cases the Blood is found always remarkably sizy) and so takes away Part of the old Stamina, which having been parboiled, and thereby

thereby grown too stiff to run freely thro' the intricate Meanders, smallest Vessels, and inward Recesses, occasions Stops and Inundations. And I take it to be a good Rule in Practice, to repeat Bleeding in all inflammatory Cases of this Sort, till the Size be for the most Part drawn off, and not much seen in the Porringer : And when we observe it is almost all gone, and the liquid Serum begins to be pretty plentiful, then, and not before, to stay one's Hand, and forbear taking away more Blood.

IF the Blood hath not in it a sufficient Proportion of Fibres, tho' at the same time it may contain Globules enough, and appear highly red, yet it will be too thin and weak, and apt to run into Separation of its Parts.

IF the Fibres be eroded and broken, as it happens in malignant and venomous Fevers, and also from some Sorts of Poisons, and Bites of venomous Animals, it is observed that the Blood taken out by Phlebotomy, or issuing forth by Hæmorrhagies, will not fairly separate into Serum and Gore, but remain in the Porringer a blackish middle half-liquid Substance.

AND this breaking, eroding, and Comminution of the Fibres and Crasis is one Cause, in ill Fevers, of various Eruptions, Spots, and Pustules.

BULL's Blood was formerly ranked in the Class of Poisons, causing Pain in the Stomach, Difficulty of Breathing, Fainting, Epilepsy, Apoplexy, and even Death : And we have it related in Books that *Midas*, *Psammegistus*, and *Themistocles* were killed by drinking it.

Now if this was really so, and true Matter of Fact, we may impute it to the many gross and strong Fibres in this Sort of Blood, which hinder it from being digested in

in the Stomach, carried thro' the Lungs, and sent clear out of the Brain.

WHERE these Fibres are too coarse and stiff, they make the Crasis and Contexture of the Mass too gross and strong to divide into such Exiguities, as it must of Necessity do, when it comes to pass thro' the less than capillary Vessels.

WHERE they are too slender and lax, they make it thin and weak, and unable to hold Consistence.

IF a Febrile Heat dry them, so as to deprive them of their Tone and Lubricity, that internal Motion of Particles, which constituteth Liquidity, will suffer Prejudice: And the Blood will not slip so easily and freely thro' the fine Meanders and Strainers of the Body.

BUT if an ardent Fever should so over-scorch them, as to make them shrink up and curl, as it were, like Snips of Parchment in the Fire, (which I take to be the Case of Liquors that have contracted an Empyreuma) they will run into such little Concrescencies, as will lay Obstructions in the inmost Recesses, and produce chronical Maladies.

### *Of the* SIZE.

IT is a peculiar gummy and oily Substance, something like the Decoction of Calves Feet.

IF the Fore-finger and Thumb be dipped into either the Serum or Gore in a Blood Porringer before it be cold, and then held close together till dry, they will cleave and stick fast, as tho' they were sized or glewed. And if the Hands be washed in warm Blood, it will be found to be very slippery.

THIS

THIS is that Gelatinous Substance which is shed into the Joints by the Mucilaginous Glands.

'TIS of this Sort which is boil'd out of Hartshorn for Jelly ; out of the Fish *Husa* to make Isinglass ; out of Skins, Shreds of Parchment, and Leather, to make Size and Glew.

THE Uses of it are to blunt and sheath up the Points and Edges of Acrid Salts ; to make the Blood soft ; to thicken the Serum, and that not as Starch doth, by filling up the Pores ; but as Gum Dragon doth Water, by sticking to its Particles, and making them bigger.

To cement and hold the several Parts of the liquid Mass together.

To impart to the circulating Mass a Lubricity, by means of which, altho' it be a thick Substance to see to, yet it can easily insinuate itself, and slip thro' all the finest Passages every where.

To keep all the Fibres and Vessels supple and moist, and qualify'd for Extension, Contraction, and Relaxation, and all their Motions, Offices, and Uses.

To make the Alimentary Juices, when carry'd into the innermost Recesses, stick and stay there, 'till they be assimilated and fix'd ; and not fall out again, as we see they do (for want of this Size) in Hectic wasting Fevers.

To line and defend the Cartilages and Bones in the Joints from rubbing and fretting one another.

LASTLY, (in my Opinion) to be the chiefest Nourishment of the nervous Fibres, Membranes, Tendons, Cartilages, and Bones ; for out of them such a Matter is extracted by boiling.

IT

It abounds more in young Bodies than in old. Thus Veal Broth is Gelatinous, but not that made of old Beef.

NATURE's Reason for this is, because the Bones and solid Parts being those that give and limit the Bigness and Length of Animals, it hath, during the Term of Growth, need of such a Plenty of Nourishment, as may increase its Dimensions; and all that Time the constituent Fibres are (like young Twigs of Trees) moist, pliable, and extensible to receive it.

BUT when once the Age comes to be such that the Fibres grow hard and stiff, and admit not of so much Aliment, then Nature prepares not so much of this Gelatinous Nutriment, as it did when there was want of a Plenty; and so the vegetative Augment stops.

IF there be in the Blood too much of this Size in Proportion to the other Parts, it clogs them, and hinders the Faculties of the Body from being vigorously executed, intangles and detains what should be separated, makes the Crasis of the Blood (tho' not rich, yet) too thick, and unfit for Circulation; upon which Obstructions are ingender'd in the Glands, Viscera, and solid Parts, as well as in the Canals and Pores; and Serum and Crudities are heap'd up, and Vital Spirits are not plentifully bred.

It is likely also, that the Fibres, through and by which the liquid Mass passeth, are by too much Oleagenous Mucilage more lubricated, suppled, and relaxed than they ought to be; and consequently becoming loose, lithier, have their Tone weaken'd, or their Action impair'd; hence also will proceed that sluggish Inactivity and Drowziness which attends very fat People, whose Nerves, Membranes, and other Parts, that ought to be tense and tonically braced, are relaxed by the too great Proportion of Oiliness in the Blood.

BUT if this Size, Mucilage, and Oil be deficient, the Constitution will become hot, dry, lean, and meagre; and the fretting corroding Humours and Salts being not sufficiently attemper'd, corrected, and sheath'd, will excite Uneasiness and Pains, and will injure especially the Membranes and most sensible Parts.

BUT most remarkably the Lungs; through which the Blood hath such a Thoroughfare, and whose vascular Substance and extremely minute Vessels are so tender, as to be more easily annoy'd and hurt than any other almost in the whole Body: And so hence commonly happen Hectic Fevers and Consumption.

SOME who have been so curious as to taste the Serum of Persons let Blood in a nervous Rheumatism, (for the true muscular Rheumatism is not often seen now-a-days) never found it more salt or sharp than usual in other Diseases; and therefore take up an Opinion, that this Distemper is not caused by any morbose Acrimony of the Blood, but by its mucilaginous Thickness, which not finding free Current through the Capillaries, stops, or, at least, creeps on but slowly, and sheds often Serum into the Parts; which extending and tearing asunder the Fibres of the Membranes beyond their natural easy Tone, excites Pain.

CONSENTANEOUS to this a Physician told me, that in a Rheumatism, he hoping to sheath the pricking Points of the Salts, gave for some considerable Time three Ounces a Day of Gum Arabic dissolv'd in a watery Vehicle; but he thought the Distemper grew more painful and obstinate by its Use, and so was forced to leave it off.

Of CIRCULATION of the BLOOD and  
SANGUIFICATION.

THE Blood, by the Pulfation of the Heart, is driven out of the left Ventricle, thro' the Arteries, into every the minuteft Passage and remoteft Particle of the whole Body, and imparteth all along as it goeth, natural Heat, Vitality, and Nourifhment.

IN the doing of this, it fpende much of its Vital Spirit, and leaves its fineft Alimentary Juices in the Parts to be nourifh'd ; and in its Passage grows foul with effete Re-crements flowing into it from all Parts, according as their Nourifhment growing old and ufelefs falls off into it.

AND then the Blood being by thefe means become vapid, lifelefs, and blackifh, is in that Condition taken up by the Veins, to be carry'd back to the Heart and Lungs, where it is to be new wrought up and vivify'd again.

IN its Passage thither it receives into it, from the left Subclavian Vein, a continu'd Supply of fresh Chyle or Lymph, which falls down with it by the *Vena Cava De-fcendens* into the right Ventricle of the Heart ; but is as yet nothing different from venal Blood, appearing every whit as black and grofs.

BUT when it is transferr'd thence into the Lungs, it undergoeth a great Operation, and notable Change.

FOR by the Admiffion of Air in every Infpiration, (20 or 24 of which are ufual in one Minute) by the never-ceafing Labour of the Lungs, by Conquaffation, mutual Collifion of Parts, by fine Percolation and kindly Warmth, every Atom of it is fucceffively and perpetu-

ally subtilized, new beat up, and intimately mixed, and also by every Expiration depurated from fuliginous Particles : By these Means it is recover'd into a bright, splendid, coccineous Colour, and render'd a sparkling, spirituous, vital, scarlet Liquor of Life.

AND thus being new made up and fresh, it runs into the left Ventricle, to be thence sent out again into all the Parts of the Body as aforefaid, by the Name of *Arterial* Blood.

FOR the illustrating of this Matter, let us consider the incomprehensible Exility of the sanguiferous Vessels, concerning which Dr. *Power* (*Experim. p. 59.*) saith, Certainly if we can at a Lamp Furnace draw out such small Capillary Pipes of Glass, that the reddest Liquor in the World shall not be seen in them (as I have often done) how much more curiously can Nature form the Vessels of the Body ? nay, and bore them too with such a Drill, as the Art of Man cannot excogitate.

BESIDES, we see even in our own Eyes, that the sanguineous Vessels that run along in the White of the Eye, are not discernable, but when they are preternaturally distended in an Ophthalmia, and so are turgid and conspicuous.

NOW the Blood, which streams through such marvellous narrow Channels, must, to be admitted into them, consist of Particles almost infinitely small.

AND because abundantly less than Capillary Arteries branch into the furthest Extremities, and minute Recesses of the Lungs, and are ramify'd all along with the Air Vessels in all their least Divisions, every the least Atom of Blood must needs be mix'd with the like Atoms of Air.

THE Consequence of this will be, that if we suppose one Ounce of Blood passeth through a Man's Lungs every Pulse, and a common Pulse beat 80 in a Minute, then 80 Ounces will be divided into Particles, cohobated, mix'd with fresh *Æther*, and new made up every Minute.

AND this continual Operation of the Lungs, and perpetual Renovation of the Blood, is that most wonderful Contrivance which Nature hath instituted, and makes use of to conserve the Liquidity, Mixture, and Crasis of the precious Liquor, and to continue Circulation, Warmth, and Vitality ; and without this, or some equivalent Artifice, it would be (as far as we know) utterly impossible for Animals (perhaps even Mites) to live at all.

THIS great Office of the Lungs hath not, as yet, (unless I have overlook'd it) been enough and sufficiently taken Notice of and explain'd by our Anatomists ; who now-a-days, that they may not foul their Fingers too much, nor make themselves sick with offensive Smells, search for, and shew their Pupils little else but the Origin and Insertion of Muscles, especially such as make a Sound, as *Sphenopharyngæus*, *Cephalopharyngæus*, and the like ; not much regarding the infinitely fine Contrivances of Nature in the Animal Oeconomy, which is the Foundation upon which should be built the true Theory of Distempers, and rational Practice of Physic.

### *Of the ARTERIAL BLOOD.*

THE Arterial Blood is much redder and brighter than the Venal ; and that this Alteration is made not in the Heart, but in the Lungs, is evident to Sight ; for if (in live Dissection) the Arteria Pulmonalis, which carries from the Heart to the Lungs, be open'd, the Blood flowing

ing from it will appear swarthyish, like the Venal; but if the Vena Pulmonalis, which carries from the Lungs to the Heart, be open'd, it will, before it arrive at the Heart, be florid and bright like Arterial.

THIS fine Scarlet Colour of the Arterial Blood is caused,

1. BY the Admixture of glittering Aerial Particles.
2. By the Beating of it up anew into innumerable little Bubbles (like those of fermenting Liquors).
3. By straining the Globules (like Mercury thro' Leather) whereby they being cleared and freed from the foul Copula's they had contracted, have Power to exert their natural elastic Force, and recover their spherical Figures; and by that Means reflect the Rays of Light like so many convex Glasses.

### *Of the VENAL BLOOD.*

**I**T is (while in the Veins) blackish, as before said; but when it is let out into a Porringer, its Superficies is commonly seen as bright and coccineous as the Arterial.

THIS is caused not only by the glistering Atoms of either mixed in with it, but by its lying open in the free Air without Pressure, whereby the elastic fizy Moleculæ, by a Motion of Restitution, spring out again into their natural globular Figures, and, like a Multitude of Bubbles, look bright.

AT the same Time the Mass under it will be blackish; the Reason of which is, because upon the exhaling of the Spirits, the pulpose Moleculæ sink down close together, whereby each single Globule is compress'd and squeez'd flattish, and so the Mass, instead of being an Heap of Convex Glasses to reflect the Light briskly, is  
now

now become a dead cavernous irregular Clot, which absorbs the Rays, and remains of a swarth Colour.

HENCE also is known why, when the coagulated Blood in a Porringer is turn'd upside down, the Bottom of it, at the first turning up, appears blackish ; but (if the Spirit be not wholly flown off) will, in a little Time, turn to a brighter Red ; namely, both because Air comes to it, and because its Globules being now free, recover their Convexities.

IT is observ'd, that the Blood which in Phlebotomy, or out of the Nose or Lungs, comes Drop by Drop, is generally of a bright Red ; but that which runs from the same Person out of a large Orifice, and streams apace with a Radius from the Arm, is mostly swarth.

THE Reason is, because the Air cometh to touch the Drops all round, and the Globules, in such small Bulks, cool and grow consistent enough to maintain their Convexities before the Spirits have left them ; and so when they come to compose Clots, they are not wholly press'd out of Shape.

BESIDES the Causes and Causes afore said, an high Scarlet Blood will be caused by muriatic acrid Salts ; as it usually is seen in a Pfora, Leprosy, and other cutaneous Affections.

MORBOSE, febrile, and venomous Particles in the Blood, will frequently produce a lively florid Colour in it ; but this portends ill ; is often seen in malignant pestilential Fevers ; and, I believe, is always so in the Bleeding Small-Pox.

*Of the PASSAGE of the BLOOD out of the  
ARTERIES into the VEINS.*

**I** HEAR it is the current Opinion of our modern Anatomists, that the Arteries, when they are run out into their smallest Pipes, have no proper Extremities, but there become Veins, making with them but one continu'd Channel ; and therefore the Blood throughout the whole Body is always invafated.

AND for this they think they have ocular Demonstrations, when they plainly fee (with a Microscope) the Blood running fwiftly and without ftop, its Circle in the Tail of a little Fish, Tadpole, or Lungs of a Frog.

BUT tho' this Motion be undeniably vifible, and tho' they cannot difcern the Blood diffufing itfelf from the Ends of the Arteries into any Parenchyma, or other Substance fituated between the Arteries and Veins, yet this is no certain Proof of there being no fuch Thing.

FOR the Exilities of Nature, where fhe is upon her fine Works, are utterly undifcoverable. *Leewenhoeck* reports, that he had traced the Arteries, till he faw them twenty thoufand times lefs than an Hair of his Beard, and yet could never perceive where they anafomatified with Veins, nor where they ended. And perhaps *Ruyfch* hath had no better Succels with his admirable Injections.

THIS Opinion feems to me to labour under feveral infuperable Difficulties : For if the Blood be always fhut up in Arteries and Veins, it would follow, That,

I. ARTERIAL and Venal Blood muft be the very fame ; for by this Suppofition, nothing can pafs out of it,

it, and nothing can come into it, except Lymph and Chyle ; and these too not till they arrive at the Subclavian Vein, where the whole Circle is almost compleated ; and therefore to that Place the Venal Blood must be unalter'd from the Arterial ; which Experience tells us is not so.

2. No Animal Spirits can be made ; because the Blood being continually shut up in the Arteries and Veins, cannot enter into the Glands of the Cortex Cerebri, to be as 'twere distill'd, or rather strain'd into Spirits.

3. No Part, that is not itself an Artery or Vein, can be moisten'd and nourish'd, any more than a Garden can by Water in a close Pipe laid through it, without any Apertures for that Water to issue out at. And if this were so, I do not see of what Use the Blood can be, but just to bring Warmth into the Parts.

4. THERE being a daily Measure of Chyle brought into the Blood Vessels, and they having no excretory Vent out again, and also nothing (unless we allow a small Matter of spirituous Halitus) being able to break out thro' the Coats of the Arteries, the Vessels must burst, and Life cannot be continu'd after Nourishment is begun to be carry'd in.

5. THE Blood cannot be depurated, and freed from veterane Recrements ; because in the supposed close vascular Canal there are no Glands to sequester such Matters, and fit them to be carry'd off by the Ways of Expiration, Perspiration, intestinal Dejection, &c. And if it were thus, then all the Colatures of the Body can be of no manner of Use at all.

6. WHERE there is no Wound, no Hæmorrhage can possibly happen, unless the Vessels break to let the Blood burst out. But none will think this can be the Case of

common Bleedings from the Nose, Hæmorrhoids, Uterus, &c. since it is a much more easy and natural Account to say, all these, and the like Issues of Blood, are from and out of the Extremities of the Arteries.

7. IF the Blood and Humours were always close kept up in the Vessels, and could not find Passage out, it would follow, that there could be no Transpiration nor Sweat; no Spots or Pustles could be sent out in eruptive Fevers, neither could there be at any Time any Inflammations or Tumours of any Sort.

ALL Phlebotomy must be effectually the same; namely, meerly evacuatory, and serve to no particular Use of Revulsion, Derivation, &c. and it would be all one which Vein were open'd, either in the upper or lower Province of the Body.

MY Notions of these Matters I endeavour to explain thus.

1. EVERY Artery in its Progress from the Heart, divideth into less and less Sprigs.

2. THESE run into, and terminate in Interstitia, or Substances between the Capillary Arteries and Veins.

3. THESE Interstitia consist of Glands and carnous Fibres, stitch'd together, as 'twere, with nervous Fibres, to keep them firm.

THE Blood that is brought to the conglomerate Glands, parteth there with such Serum, as is to be carry'd by the lymphed Ducts into the common circulating Mass.

THAT which is brought to the Conglobate sheddeth off, and sendeth, by proper excretory Ducts, such Liquids, as the peculiar Construction of each Gland produceth,

duceth, *viz.* Saliva, Sweat, Urine, Pancreatic Juice, Bile, Fæces, into the Intestines, &c.

THE little Arteries aforesaid carry Blood and Vital Spirits, not only into the Glands, but into the hollow carnous Fibres also; and that for the following Uses:

1. To supply Nourishment to them; and daily to repair the Wastes of Nature.

2. To receive into it, and as a Vehicle to carry off the Recrements of worn-out Nourishment; which, when they have serv'd their Time, and are of no further Use, drop out of their Loculi into the common Mass.

3. To remain, and be constant and stationary there, for the causing and keeping up of natural Heat, Vigour, and Vitality.

4. To be a main Instrument of muscular Motion.

THAT all these hollow Flesh Fibres are continually replete with Blood every where, seems manifest from this, That if any muscular Flesh be prick'd with a Needle, it will send out Blood at the Puncture.

AND that these Fibres are not Arteries, we may conclude,

1. BECAUSE they pulse not.

2. BECAUSE they are not white, but red; and therefore have not four Coats, like Arteries; but only such a superfine Tunicle each, in the Manner of a minute Sacculus, to contain Blood.

3. BECAUSE if a Finger, or any Part where there is Flesh, be cut, the divided Fibres will emit Blood, till all their stationary Store be run out, and then the Bleeding will stanch of itself; which it would not do if all the

wounded Part were Arteries and Veins, and nothing else.

THIS Opinion of stationary Blood in the carnous Fibres, seems to be further confirm'd by the great Quantity of Gravey issuing out of a boil'd Rump of Beef, or Leg of Mutton.

THAT there is Blood in this Gravey appears to the Eye, if it be not thoroughly boil'd; but that it is not Blood alone is as plain; because, boil Blood how you will, you shall never bring it to be Gravey.

I say, therefore, I take it to be partly Blood, and partly nutritious Juice, not yet absolutely assimilated into Flesh; both which run out of the Flesh Fibres when they are cut asunder, and not out of the Blood Vessels; which being so very small that they cannot be discern'd, cannot therefore at an Instant pour forth so great a Quantity as we see will gush out.

FROM what hath been here said of the carnous Fibres being always replete with a permanent Stock of Blood, appeareth a Reason why letting of Blood near the Part affected, is usually more effectual towards the removing of a Malady, than it would be at a Distance; for it directly and immediately emptieth the sanguineous Fibres, that are actually affected, or those that are near to it.

AND also, why at the same Time of letting Blood, the first Porringer shall most commonly differ from the second, and that from the third; namely, because at first that which is drained out of those Fibres mixeth variously with that which cometh out of the Veins; and when that is all come away, the Variety ceaseth, and all that runneth out afterwards is meerly Venal; and by it we may make a better Judgment of the general State of the  
Blood,

Blood, than by that which came out first, and was mixed with stationary local Blood.

AND here I take Leave to make an Excursion, and explain my particular Notions concerning the internal Habit.

THE furthest Journey the Arterial Blood can go, is into the foresaid Glands and carnous Fibres, or whatsoever else there may be of Rete mirabile of nervous solid Fibres, that constitute the Interstitia.

AND these I account to be the Extremities of the Body, let them be in the inner or outer Parts, or near or remote from the Heart, where the Circulation beginneth and endeth.

AND whenever I speak of the internal Habit, I mean these Parenchymatous Interstitia; and I conceive this Habit to be the Seat of many abstruse, obstinate Chronical Diseases.

FOR when the stationary Blood is there detain'd, till it be polluted with effete Recrements of worn-out Nourishment, or till it become rancid, acrid, fermentative, or otherwise corrupt, noxious, and offensive, it will obstruct the minute Passages, foul the Blood, disorder the Spirits, and by these Means produce Cachectic, Scorbutic, Hysteric, Hypochondriac Spasms, Vapours, and other Valetudinarian Constitutions and Affections.

As to Vapours, I have formerly (in my *Pharmac. Ex-temp.*) express'd my Notions of them thus:

THEY are what *Helmont* calls *Gas Sylvestre*, an invifible, impalpable, and incoercible Spirit, and may perhaps be liken'd to that of flying bottled Ale, the wild Part of which no Chymist can catch.

THEY

THEY seem to be produced by an highly exalted and volatilized acrid Juice, which, by fermenting with a rancid viscous Matter in the innermost Loculi of the Body, where the Extremities of the Arteries have thrown out and deposited it, drives the touchey elastic Spirits (residing in and flowing into those Parts) into divers wonderful Trepidations, Vermiculations, Startings, Explosions, &c. cause Tensions, windy Pains, and other Disorders in the Hypochondria, and Fancies and Fears in the Brain, and are what are usually call'd *Vapours* and *Spleen*.

THESE Affections are very hard to be dealt with, and that upon two Accounts.

1. BECAUSE their Situations and Places being the very innermost Recesses and Depths of the Body, the Nature and Essence of their material Cause cannot be plainly, distinctly, and certainly known.

2. BECAUSE, if the Matter of them were never so perfectly understood, yet the Medicines that are employ'd to go so far in quest of the Maladies, must needs, by mingling in with the Blood and Humours, and passing thro' the many Colatories, be very much alter'd from their proper Natures, and spoil'd of their specific sanative Powers; and therefore cannot perform an absolute Cure.

BUT to return.

THE Arteries have their Original from the left Ventricle of the Heart; and from thence carry out the Blood into all the Precincts and Parts of the Body.

THE Aorta is their first Beginning; and that (contrary to the Manner of our Rivers) continually, as it proceedeth, divaricates into less and less Rivulets, till  
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at length it dwindleth into less than Capillary Rills ; each of which enter into the said Interstitia, and there lose themselves.

THE Veins are the Reverse ; for they take their Rise where the little Arteries end, and are as minute as they.

THEIR Office and Business is, to suck into their little Mouths whatever occurs to them in the Interstitia, that is fluxile, and fit for Entrance and Passage.

AND all along as these Venulæ run, other the like falling in with them, (like Ditches and Drains into a River) they at length unite, and become one great Channel, (the Vena Cava) which poureth all the Blood into the Heart.

I know not whether the following Particulars may make my Notions plain to the Apprehension of the Reader.

1. SUPPOSE a large River divided as it passeth along into innumerable little Rills ;

THE Aorta divided into Capillary Twigs.

2. EACH of these Rills entereth into, and terminateth in a small Morass, with Moss and Rushes growing in it.

EVERY Arterial Twig runneth into, and endeth in a Parenchymatous Substance, situate between the Arteries and Veins, and consisting of carnous Fibres and Glands.

3. THE Streams of Water out of these Rills, preserve a middle strait Current thro' their Morasses.

THE Blood is seen (with a Microscope) to flow in a direct Course in the Tail of a little Fish.

4. YET some of the Water spreadeth laterally, and so irrigateth the Mofs and Rushes, that they are never dry.

THE Blood from the Capillaries, not only glides directly on, but some of it gets in among every Particle of the Glands and Fibres.

5. THE Water that laterally irrigateth the Morafs, runneth not out of it so fast, as that doth which keeps the middle Channel, and therefore there is always a Portion of it left there.

THE Blood which is got in among the Glands and Fibres, floweth but slowly in Comparifon with that thro' the middle Channel; and therefore those intermediate Parts are continually replenish'd with Blood.

6. THE fresh Water that incessantly floweth, in having a free Communication with that which remain'd in the Morafs, preserveth it from Corruption, and continueth it a living Water.

THE Blood constantly flowing in fresh, preserveth Vitality in that which was almost stagnant in the Interstitia.

7. THE Water that floweth in, washeth off the Mud and Foulness which would otherwise gather and settle upon the Mofs and Rushes, and by that Means prevents the Morafs from being choak'd up, and becoming a filthy Mire.

THE Blood that runneth into the Interstitia, washeth off from the Glands and Fibres the old worn-out Nourishment, effete Recrements; and thus preserveth them from Obstructions and Putrefactions.

THUS

THUS much of the Blood brought into the Interstitia by the Arteries.

8. RILLS equally small with the former, arising in the Substance of the Morasses, receive into their Mouths, not only that Water which runneth directly thro', but that foul Water also which soaketh out of the Morafs, and carrieth it to bigger and bigger Rivulets; till in their Progress they joining together, constitute a great River that poureth all into the Sea.

THE little Twigs of the Veins, having their Rise from among the intermediate Glands and Fibres, suck in not only that which flowing in a direct Course is truly Arterial, but that also which coming out of the Interstitia is foul and venal: These they convey from less to bigger Veins, till they uniting make the Vena Cava, and that poureth them into the Heart.

### *Of the* AIR.

THE Air is that vast Collection of liquid Matter, which inclosing the Body of the *Sun*, as Centre; and including the Orbit of *Saturn*, as Circumference, takes up the inconceivable Space of our Solar System, and constitutes *Immensum Aeris Mare*, (as *Lucretius* calls it) that immense Ocean which the Planets swim in.

FOR it doth not consist with my Way of Thinking, to believe, that when the great Architect contriv'd and set out our World, he left all that boundless Expansion of the Planetary Regions a wild Waste, and a meer Vacuum, with no sensible Matter in it.

AND I see no Necessity of such a Supposition; for I can conceive, that if it were replete with *Æther* and Air,  
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yet the Planets and Comets might as commodiously glide thro' it, as the Whales can swim thro' the more gross Waters of the Sea.

It consists (as to my Apprehension) of *Æther*, proper Air, and Atmosphere.

### *Of ÆTHER.*

**I** Take *Æther* to consist of elementary Atoms, made in the Creation of our World, which being simple Corpuscles, are infrangible and unalterable in themselves; but being compounded together, are capable of infinite different Coalitions.

NATURE every where delights in Variety, and therefore we are to believe these Atoms to be of innumerable Sorts, perfectly differing in Sizes and Shapes.

AND since they are all real Bodies, it is certain that every Individual hath its own Quality, Causality, Agency, and Energy, according to its specific and particular Nature.

THEY are so agile, as to fly as quick as Light; so minute, as to penetrate and pervade all Things: Some are agreeable and friendly to our Spirits, Humours, and Bodies; some hostile and hurtful, and the rankest Poisons in the World; and infinite others, it is certain, there be that affect us different Ways.

THO' the *Æther* be in some Proportion mix'd in with the Air and Atmosphere, yet it is undoubtedly more pure and powerful near the Body of the Sun; and this I call the highest Region.

## Of PROPER AIR.

**I** Apprehend it to be little springey Atoms, capable of Compression and Dilatation; and when they are squeez'd and bent, they have a Power (when the Force is taken off) of Resilition, and perpetually endeavour to unbend and expand themselves again.

THE Rarety of the Air is from this elastic Force, and is really beyond human Conception.

MR. *Boyle* affirmeth by undoubted Experiment, that the same Proportion of Air, by only having the Pressure of the Atmosphere taken off in the Air-Pump, is capable of being unbent to such a strange Degree, that it would possess thirteen thousand times its natural Space in Dimension: That is, one Point would be rarefy'd to more than two hundred Bushels.

AND Dr. *Pemberton* saith, p. 242, that Sir *Isaac Newton* found, that a Globe of such Air as we breathe here on the Surface of the Earth, which shall be one Inch only in Diameter, if it were expanded to the Degree of Rarety, which the Air would have at an Height equal to the Semi-diameter of the Earth, would fill all the Planetary Regions, even to the very Sphere of *Saturn*, and far beyond.

THIS indeed passeth my Conception; for if it could do thus, since no single Corpuscle can be at one time bigger and less than at another time; and so much Body hath so much Bulk; every Particle of Air must stand many Miles distant from all the rest.

AND such a Distance of Particles, with nothing at all between them, is to me a strange Notion of Rarefaction.

IF Ten Men be in a Company, and thence walk off, and stand each of them singly many Miles asunder; I should not be apt to say that Company was rarefy'd.

THIS middle Region I conceive to consist chiefly of proper Air and a Mixture of *Æther*; but hath none of the gross Atmosphere in it.

### *Of the* ATMOSPHERE.

**I**T is that Part of the Sky which reacheth down to the Earth, and is the General Receiver of *Æther*, Air, and whatsoever can come and abide in it.

THE Porosity of Water is so great, that there is at least forty times as much Space as Matter in it; but the Atmosphere being (as our great Mathematicians have computed it) an hundred and sixty times lighter than Water, must have Interstices and Capacities proportionable thereto.

THE main Body and Bulk of it is proper Air.

ITS Contents partly fall down from the higher Heavens, and partly rise up from the Terraqueous Globe.

THE upper Regions, at vast Distance from us, by Reason of Vacuities (which our modern Philosophy alloweth) every where interspers'd among the *Cœlestial* Corpufcles, are in so rarefy'd a State, that they cannot ferment or run into any Disorder, or admit of Tempests or Fires; but ever did, and ever will remain a quiet, calm, and smooth *Æquor* for the Planets and Comets to swim in, without Impediment or Inequality in their Courses.

BUT yet I know not why we may not put it about as a likely Supposition, that these remote Regions may either  
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by the Course and Force of Causes, as settled at first by the great Author of Nature, or by the particular Command of God himself, dart down into our Atmosphere Particles of all Sorts and Qualities, some agreeable and sanative, and at other times others, so far remov'd from our Natures, as to be in the highest Degree deadly.

AND how can we tell but that the malevolent Spirits, our mortal Enemies, being Princes of the Air, and having their *Ubi* in it, may be some times permitted (as we see Diabolical Princes among us are) to work Mischief, and bring Destruction on the Inhabitants of the Earth, by collecting, compounding, sending down, and shooting off among us venomous and pestilential Vapours in epidemical mortal Seasons.

FOR we certainly know, by many direful Instances, as that of *Job*, that the cursed Spirits have Malice, Skill, and Materials enough, to be the greatest Antiphyicians in the World, when they are let loose upon us.

*CÆLIUS Rhodiginus, l. 2. c. 7. p. 51.* reporteth, that at *Constantinople* Hobgoblins in human Shape came amongst Men, and gave them a Stroke, upon which, like People possess'd by the Devil, they lost all manner of Sense and Memory. A Fever ensued, but without any high Colour or Heat. Tubercles broke out, but not upon all in the same Parts of the Body, or Time of the Disease.

SOME lay in a profound Sleep; others were delirious, and would leap out of their Beds, to jump into (as they imagin'd) Rivers of Water to cool them, and quench their ardent Thirst. And a great Wonder it was that this Distemper was not at all contagious.

AND thus I would bring down from Above, from the high Planetary Region, (that inexhaustible Ocean, the Matter

## Of Eruptive FEVERS

Matter of all Epidemic Fevers, especially such as are either malignant or pestilent; which the great *Hippocrates* seems to have some Notion of, when he called it a *τι Δεῖν*, a Something that fell from Heaven.

AND I need not fetch it from Beneath out of the Bowels of the Earth, sending up virose Vapours from Mineral Fermentations, no-body knows what, nor for what Reason, nor where, especially in such Countries as breed not Mercury, Antimony, Arsenic, or any other poisonous Minerals.

ALSO from the said remote high Region cometh down into our Atmosphere, as I conceive, the Nitre, that pure, fine, subtle, active, and penetrant Part, which gives Vitality to the Air, and renders it so absolutely necessary, that no Animal nor Vegetable can live without it.

As to the innumerable other Corpuscles which incessantly fall down to us, and whose Effects were formerly attributed to the Aspects and Influences of the Planets, these no human Understanding can possibly take any Cognizance of; and therefore Astrology, which is built upon fanciful Observations of them, is a meer Castle in the Air, and stands upon no Foundation.

AND thus much concerning those Matters, which being sent down from the Planetary Regions, make up the most subtle and active Part of our Atmosphere.

BUT besides the Contents which come from above, its far greater and more gross Part ariseth from beneath, out of the Terraqueous Globe.

SOME of the bigger and drier Particles may be seen by the naked Eye, when the Sun shineth thro' a Hole into a darkish Room, Myriads of longish Ramenta, like Dust flying in the Rays; and it's certain that those little  
Flyers

Flyers are really in the Air at all times, tho' we cannot discern them but thus.

CLOUDS, Rain, Wind, Storms, Thunder, and all Meteors, are from Vapours and Exhalations out of the Earth and Water.

AQUEOUS Vapours are made by the expanding of an Atom of Water into a Bubble, which by Reason of its thin Pellicle, and increas'd Superficies, is become lighter than an equal Bulk of Air, and so ascends as a light Thing will in Water; even as a Leaf of Gold, tho' that Metal be of its own Nature near twenty times heavier than Water, yet being beaten out into so large a Superficies, will swim upon its Surface.

It's a vast Quantity of Vapours that Marshes, Rivers, Lakes, &c. send up; but the Seas furnish out immense Measures. Dr. Hally (*Philos. Transf.* N<sup>o</sup> 189.) proves by Experiments, that the *Mediterranean* Sea alone must lose in Vapours in one Summer's Day, Five thousand two Hundred and eighty Millions of Tuns: And addeth also, that Waters are sometimes lick'd up by the Winds, faster than they are exhaled by the Sun.

THE Surface of the Earth affordeth unknown Quantities, according to its Climate, Temperature, Situation, Soil, Dryness, and Moisture; the Sun rarefying and extracting, the Wind driving, and the Pores of the Air absorbing them.

THUS in an hot parching Season, if a Shower fall, a sensible fragrant Exhalation out of the Ground fills and perfumes all the Air.

DRYER Exhalations, Wind, Spirits, Mephytic Anathymiata, deadly Damps long pent up in the Bowels of the Earth, in filthy cavernous and deep Abysses, and bred

bred by subterraneous Poison, Lakes and Seas, Steams from Mineral Ferments, and forced up by Earthquakes, Falls of Rocks, Inundations, Fires, Explosions thro' gaping Chasms or private Vents, sometimes poison great Tracts of the Atmosphere.

THESE Sorts of virulent Miasmata, by reason of their Subtilty and Spirituality, work not as grosser Poisons do, openly, by corroding, inflaming, and mortifying the Stomach, Intestines, or other solid Parts; but perpetrate their Mischief clandestinely and suddenly, by seizing directly upon the Spirits, dissipate, stupify, or downright kill them both, Vital and Animal together.

MORE than all these, we cannot but believe the Atmosphere is full of Animalcles, and their Seed in their Seasons infinitely small, and, as 'twere, meer living Points.

LEEWENHOEK assures us, he has discover'd some so inconceivably minute, that an hundred thousand Millions of them would not make a Bulk bigger than a Grain of Sand; and Dr. *Hook* (see *Ray's Wisdom*, p. 387.) saith, Millions of Millions may be contain'd in one Drop of Water.

To this Purpose some (and particularly *Kircherus*) are of Opinion, that Animalcles have been the Causes of malignant and pestilential Fevers in Epidemic Times, which differ in Essence and Symptoms, according to the Nature and Venoms of those Creatures.

THUS the Atmosphere and Air is fill'd, both from Above and Beneath, with innumerable Millions of Millions of Species or Corpuscles, Aporrhæa's, Steams, Vapours, Fumes, Dust, little Insects, &c. all which make it such a wonderful Chaotic Compost of Things, that contains the Seeds of all Good and Evil to Man, as surpasseth the Understanding

Understanding (as I suppose) of even the highest Order of Archangels.

It consisting, for the most Part, of dissimilar Bodies, commonly undergoeth most terrible Fermentations and Conturbations, causing Hurricanes, Tempests, Thunders, prodigious Fires, &c. which horribly clashing and dashing together, break and tear all Connexions and Bonds of Continuity to Pieces, and explode Blasts and Torrents of Corpuscles and Compounds in our Skies.

AND we may well believe, that vast Tracts of our lower Region are as different from one another, as those are in different Lands, and as those are of the Sea, which, when look'd down upon overboard at some Places, appear green, at others blue, others white ; which being so in the deep Waters, must be attributed to the meer Nature of the Waters, and not to the Colour of the Sand, Earth, or Rocks at the Bottom.

OUR modern Astronomical Philosophers say, the Atmosphere hath positive Weight ; and that a perpendicular Column of it weigheth upon, and compresseth the lower Parts of it, and maketh the Particles of the Air it containeth, to be in a bent State, like Springs, or a Lock of Wooll press'd ; and that, more or less, according as the superior Atmosphere becometh heavier or lighter.

THE Expansion of the Air increaseth in Proportion, as the incumbent Weight and Pressure of the Atmosphere decreaseth ; and therefore, at the Height of 41 Miles, they compute it, that the Air is so rarefy'd, as to take up 3000 times the Square it occupy'd here with us ; and at 53 Miles Height, it would be expanded to 300000 times.

SOME have thought the Atmosphere riseth above the Earth to the Height of 7 Miles ; and others to more than

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45 Miles :

45 Miles : But perhaps it is a vain Attempt to go about to limit and determine it.

FOR by Reason of the innumerable Alterations caus'd in it by the Mixtures of *Ætherial* Atoms, and the Influences and Agencies of the Planetary Region, which it is impossible we should come at any Knowledge of :

AND also by Reason of the great Fires, Tempests, and other Meteors, causing vast Conturbations, Mutations, different Degrees of Heat, Cold, Moisture, and Drought ; it must be liable to such Compressions and Dilatations, that it never stands at any Stay ; but sometimes riseth higher, and sometimes sinketh lower, as we see that in the Barometer doth.

AND further, if there were no such Commotions in the Atmosphere, yet its Density, according to the different Weight of its Contents, must gradually go off, and its Substance grow thinner and thinner, all along as it reacheth higher, till at last all the Terrestrial Ramenta being left behind, it becometh pure Air and *Æther*.

AND therefore it cannot be such a precisely bounded Portion of Air, as to extend itself just so high, and no higher ; and there part from the next Region, and lie under it in so distinct a Body, as Water lieth under Oil. And for these Reasons, I say, it is impossible for Man to judge of the Height of the Atmosphere.

THE Atmosphere affords to all Animals, even to Fishes, and even the little Insects, the Matter of Respiration, without which they cannot live ; and must be rightly fit for the Lungs, or other equivalent Parts.

THE Air that is fit for Respiration, must be of a due Consistence, as to Fineness and Grossness ; of a right Temper, as to Heat and Cold ; of a proper Composition, as to its Contents.

AND

AND must be sufficiently stored with Ætherial Nitre, to make it fresh and lively.

FOR it hath been try'd, that if Air be baked in a hot Oven, so as to drive out of it all the Nitre, and it be stopped in a great Bottle, and cooled again, no Sort of Animal will live in it.

SUCH Air as is not vivify'd by a competent Proportion of ætherial and elastic Particles, whose Expansion is of so necessary Use for the Opening of the minute Air and Blood-Vessels in the Lungs, that Respiration cannot be perform'd without them; such an Air, tho' it contain not one Particle of Poison, yet is deadly.

AN Instance of this is that of *Le Grotto del Cane* in *Italy*, where a Fume, having no ætherial or elastic Particles in it, and therefore holding down visibly, and being so heavy as not to rise from the Bottom of the Cave a Foot in Height, is mortal to Dogs, and other Animals that, hanging down their Heads, take in that Fume for Breath: But Man, and other Creatures, that, bearing up their Heads, breathe above it, receive no Manner of Harm by it.

FOR from want of this ætherial Air, and also from the Admixture of such recremental Fumes, as being now effete, foul, and of no further Use in the Body, but becoming cadaverous, and abominable to the Lungs, are thrown out of the Blood by every Expiration; the Air that is breathed will hinder, yea, and quite stop the Office of Respiration.

HENCE appears a Reason, why breathing often the same Air in a small Room, and in a great Concourse of People, makes Respiration difficult and painful. Hence also, why in a Diving-Bell there is an absolute Necessity of renewing fresh Air.

TO this Purpose Air that hath been long pent up in Caves and Caverns, for want of Ventilation and Communication with fresh Air, may lose its vivifying Parts; and tho' it should have no heterogeneous Matter brought into it, may yet in time fall into such putrefactive, or other Changes, as to be much disagreeable to our Lungs and Blood, yea, unwholsome, and even deadly.

THE Animals which suffer a Metamorphosis, will require such a particular Air as is agreeable to that State and Species they are changed into.

THE *German Ephemerides* speak of little Animals, like Eels, which live in Vinegar for a while, and then creep out upon the Side of the Vessel to breathe the Air; where they are chang'd into Aurelias, which produce small Flies; and these Flies betake themselves to the Vinegar again, and there they breed, and bring forth a new Generation of young ones as before.

IF our Air were all pure *Æther*, its Particles would be all Fire, Darts, and Swords; and we could no more live in it, than a Fish can in Brandy.

IF it be too thin, sharp, cold, and disproportionate to our Lungs, we cannot breathe and bear it. Thus upon the exceeding high Mountains of *Periæcaca* in *Peru*, which, *Acosta* saith, look as much higher than the *Alps*, as Towers do common Houses, and perhaps are the highest Mountains in the whole Earth; he and his Companions on the Top of these were taken with Difficulty of Breathing, and Vomiting.

YET Eagles and other Birds that soar high, and live much in the Sky; as also those that are made for cold Climates, may breathe and live best in such Air.

IF it be thick, and so clogg'd with gross Contents, as to be unfit to pass and repass the minute Tubicles of the Bronchiæ freely and easily, as it is in moory Grounds, that send up Plenty of such Vapours as foul the Air, it is scarce to be borne by such as have weak and obstructed Lungs.

YET Worms, Moles, and the Subterranean Animants, may be so framed by Nature, as to breathe best in such an Air.

IF it be too full of such Contents as are not positively bad of themselves, and do not greatly irritate or heat the Lungs; yet it is frequently found disagreeable to some Men, and not to others. Thus the Air of *London*, which is naturally very wholesome, yet is such, by reason of the Sea-Coal Smoak, and the Aporrhæa's from Millions of Millions of Things, that many People cannot live in it: And some again, who cannot bear sharp nitrous Air, cannot live any where so well out of it.

IF it contain such Particles as are offensive to the Lungs and Spirits, it makes Breathing heavy and painful, and hard to be reciprocated: Thus it is in Rooms fill'd with Smoke.

THE Smoke of Charcoal, if one be shut up with it in a close Closet, will suffocate and kill; yet Colliers (by Use) can breathe freely in such Clouds of Charcoal Smoke as they can scarce be discern'd in.

IF it carry in with it such Corpuscles as put the Lungs to Pain, and irritate them vehemently, 'twill be intolerable. Thus the Smoke of *Guiney* Pepper burnt, will create continual violent Coughings, Sneezings, Straining, and Vomiting.

## Of *Eruptive* FÉVERS

THE Smoke of Sulphur burnt, hath in it such acid sharp Points and Edges, as prick and cut through the Membranes of the Bronchiæ and Capillary Blood-Vessels; stop the Spirits and Respiration, and so becometh deadly.

DAMPS in Mines, the Lake *Avernus* in *Campania*, and many others, send up such virofe Exhalations, as kill even the Birds that fly over them.

THE febrile Atoms that are in the Air, and are suck'd in by Inspiration, produce such Fevers, as, according to their Natures, are benign, malign, or directly venomous.

## Of *Different* AIRS.

THE Air of different Regions is different, and that from many Causes; namely, from Climate, Situation, as to North, South, East, and West; from their Respect to Sea, Land, Mountains, Vallies, Plains, dry Land, Morasses, Soil, Fossils, Trade-Winds, &c.

BESIDES these plain Reasons and Causes of Difference, there are thousands of others which are occult, and unknown to us.

THUS *Candia* and *Ireland* will neither breed nor bear venomous Animals; and it deserves Inquiry, whether they are obnoxious to pestilential and venomous Fevers?

'TIS said the Plague never breeds in cold Countries; but may be brought into them *aliunde*.

THOSE Countries that produce Lead or Quicksilver, it's observ'd very seldom have the Plague.

*MOLUCCA,*

*MOLUCCA*, *Java*, *Sumatra*, and all those Lands wheresoever Pepper groweth, are very subject to pestilential Fevers.

IN *Tercera*, an Island of the *Azores*, if Iron or Steel be let lie in the Air, 'twill presently take Rust.

IN the Western Coasts of *Africa*, the Sky being mostly serene and calm for long times together, the Air is unwholsome and sickly.

IN *St. Thomas's* Island, from the Winter Solstice, to the Summer one, if the Winds are down for two Months, or more, the Inhabitants generally grow sickly, and a great many die, unless the Winds rise to ventilate and purify the Air; and in such a Calm, so many Seamen have sometimes died a Ship-board, that there have not enough surviv'd to sail the Ship.

IN *Guiney*, and some other Parts of *Africa*, after Rain the Earth exhales such venomous Vapours, that it is not safe for the Inhabitants then to be out of Doors; and if the Cloaths be rain'd upon, they will breed little Worms.

*BONTIUS* affirms, that the Plague is never in *St. Helena*, nor in any adjacent Island.

IN *Egypt* it rains very seldom; but when it doth (as reported) it blistereth the Body where it wetteth.

AT *Alexandria* in *Egypt*, and *Grand Cayro*, every Year from *September* to *March*, that is, till the *Nile* increaseth, and the *Etesian* Winds blow, pestilential Fevers rage.

As to the Small-Pox and Measles, they are wonderfully different in different Airs and Countries: They are reported to be much more favourable at Sea than at Land;

Land ; as also in *Scotland* and *Holland*, than in *England* and *France*.

*Ett-Mull.* Vol. II. p. 404. b. saith, The Measles are more dangerous in *Italy* and *Spain*, than the Small-Pox are in *Germany*. The Measles in *France* are always with a Fever ; but the Small-Pox sometimes have been observ'd without it : On the contrary, in *Germany* Fevers always accompany the Small-Pox, and usually run higher than in the Measles. *Bartholin* reports, that in *Iseland* the Small-Pox come periodically every Twenty Years ; in *Japan* they are very common. The Measles at *Amboyna* are a peculiar Sort, differing from ours.

### Of VENOMS.

THE Atoms of venomous Effluvia are of such an Adamantine Hardness and Firmness, as to be utterly infrangible and invincible.

THEY are so pointed and edged, and perhaps jagged, crooked, and barbed, that they cut, tear, bruise, stick fast in, and destroy, where-ever they come ; and can scarce be drawn or driven out by any Thing or Means.

THEY are of such Minuteness, as to be able, when let loose, to pass and repass freely into, and out of the least and inmost Pores and Recesses of the Solids, as well as Liquids, of the Body.

It's likely they are of innumerable Figures and Sizes, and so become the Elements of all the different Species of Poisons.

WHEN they cluster together, they turn into such Composites, as the Pores and Receptacles of our Bodies are fit to receive into them ; even as a Mortice is fitted

to a Tennant: Hence may some Reason be excogitated, why particular Animals are affected by peculiar Poisons.

THEY are inconceivably Volatile, and in continual swift Motion, unless when conglomerated into Moleculæ, they remain as 'twere in a crude State, and lie dormant and inviscated in some Humour or Matter for a Time, till it happen that some evident active Cause concoct and bring them forth; which Thing happens, as we daily see, in contagious, malignant, and venomous Fevers, which break not out till a while after Infection taken.

THEY have Power in their small Bulk, to turn great Masses of Liquids into the same Nature with themselves, and communicate to them a like Power also of turning others; even as a single Spark of Fire kindles Part beyond Part successively, till all be in a Flame: And they are so multiplicative and operative, that if the least Point or Particle come into the Body, it is capable of increasing almost infinitely, and fermenting every where.

THE Consideration of what Divisions and Exiguities Matter is capable of, surpasses all Wonder. *Magnenus* saith, that if a Piece of Frankincense but as big as a Pea, be thrown into the Fire, it will yield elementary fumose Atoms to the Number of Seven hundred seventy seven thousand six hundred Millions of Millions.

AND so if a Poison be thus divided, it's easy to conceive, that it may be fit and able to touch and act upon every Atom of Blood, every single Spirit, and every Particle of solid Parts in the whole Body.

AND therefore we are not to think that so much Sordes, or putrid Matter, as is seen in the Small-Pox, pre-existed in the Body while sound and well; but that the powerful peregrine Ferment, expanding and multiplying itself,  
N turn'd

turn'd and converted the natural nutritive Juices, and other Contents of the Body, into its like.

To every individual Particle in Being, there belongs a particular Bulk and Shape; and from these, and their endless Composition, there results a seminal Power and natural Agency peculiar to each, tho' in small Things they are impossible to be particulariz'd.

FOR ought we know, there may be such particular Congruities and occult Attractions between some Bodies and some Poisons, as there are between the Magnet and Iron, which affect no other Bodies, that we know of, but themselves.

AND, on the contrary, there may be as peculiar Enmities and Avoidances.

HENCE are to be deducted the Varieties of Poisons, and their different Operations; some affecting one Species of Animals, and no others.

THUS there is one Sort of Pestilence that striketh Man only, and no other Animal; another Horses; another great Cattle; another Sheep, Hogs, &c.

THUS even the Meat of one, is Poison to another; Apes and Turkeys eat Spiders; Starlings, Henbane; Quails, Hellebore; Linnets, Poppy Seeds: And the most venomous Vegetables breed and nourish their own proper Insects according to their Kinds. An Horse will take at one Dose, for many Days together, an Ounce of powder'd Crocus Metallorum, without any sensible Effect; whereas a Man cannot take one Scruple.

SIR *Hans Sloane*, in his Voyage Vol. II. p. 3. giveth an Account of the *Mancannillo* Tree, that tho' there be scarce such another Poison Plant in the World, and that it kills Cats, Dogs, Land Crabs, and Fish, &c. yet Goats feed

feed upon the Fruit, when fallen from the Tree, greedily and plentifully ; and yet neither their Flesh, nor (which is more wonderful) their Milk, is in the least poisonous ; but eaten indifferently as other Milk.

YET *Melampus*, in old Times, before *Hippocrates*, grew famous for his Cure of *Pretus* his Daughters, (who had lost their Wits) by purging them with Goats Milk that had eaten Hellebore : And it is a common Thing now-a-days to give wet Nurses Cathartics, that their Sucklings may be purged thereby.

NAY, the Particularity and specifical Energy of Things is such, that they will operate upon, and affect particular Matters, as it were electively. Thus Aqua Fortis will dissolve Silver, and not touch Gold ; and Aqua Regia will dissolve Gold, and not touch Silver.

QUICKSILVER acts upon the Serum of the Blood, and not upon the Globuli ; Opium upon the Spirits, and not the Humours ; the Peruvian Bark upon the Humours, and not the Spirits ; Steel upon the Globuli, and not the Serum ; Cantharides on the Bladder, and not the Kidnies.

DR. *Grew* teaches us, that White Hellebore and Pyrethum make the chiefest of their tastable Impression upon the Lips, wild Cucumber upon the Basis of the Tongue, deadly Nightshade upon the Roof of the Mouth, Jalap in the Throat, Wormwood in the Gullet, &c.

THE Matter, Make, and Qualities of our Bodies are so singular and various, that the self-same Venom may act in one Man chiefly upon the Head, in another the Heart or Lungs, in another the Stomach and Guts, &c. or such other Parts, whose Contexture or Contents have such Loculi, as are fit for the Reception of its Presence

## *Of Eruptive FEVERS*

and Impulse ; and there it stirs up such Disorders, as are congruous to its specific Form.

THE Effect of venomous Effluvia (for we have no Occasion to speak of Solid Poisons in this Place) act upon the Vital and Animal Spirits, the Blood, and Solid Parts.

1<sup>st</sup>. As to the Vital Spirits, they seize upon, overcome, and kill them. 2. Or they drive the Spirits quite out of the Body. Or, 3. They provoke them into Fury and febrile Commotions.

As to the Animal Spirits in the Brain and Nerves, they either hinder their Generation, or load them with disagreeable Copulæ; whence flying into Explosions, they cause Headach, Watching, Phrenzy, &c. or overpowering them, they cause Sleepiness, Stupor, and Coma.

2<sup>dly</sup>, As to the Mass of Blood, they pervert its Substance, and destroy its Contexture, variously sharpen the Serum, break the Globuli, cut asunder the Fibres, and either coagulate or dissolve it.

3<sup>dly</sup>, As to the Solid Parts, they corrode and tear to Pieces the Fibrillæ; they attract Blood and Humours; inflame, ulcerate, and dissolve them into Putrefaction; subvert the Tone of the Viscera; stop, or otherwise spoil the Glands and Colatories.

## *Of ANTIDOTES.*

EVERY Operation of one Body upon another is truly mechanical ; but the Matter, Forms, and Numbers of Poisons are so utterly unknowable to us, that no Study or Experiment can ever direct us to find out such Antidotes as are endued with such Qualities and Powers, as  
are

are fitted Atom for Atom to meet, with combat, and conquer particular Venoms.

ONLY we can, in a general loose Way, say, that Points and Edges may be broken off and sheath'd, by such Things as are properly suited for such Purposes: So Alcalies can correct Acids; and in like manner Acids can Acrids, &c.

BUT if we come close to Individuals, Particulars, and Peculiars, we cannot possibly affirm, that This Medicine directly opposeth Variolous Venoms, or That specifically Morbillous; and a Third Pestilential Poisons.

AND therefore we are not to take it for granted, that Serpentaria, Contrayerva, Bezoar, Theriaca, &c. are real Specifics and Antidotes against variolous Miasm; but only that, by their Aromatic Virtue, they stir up and invigorate the Spirits and Blood, and cause them to fly on with the more Force upon the Enemy.

BUT whensoever the Spirits and Blood are too much exagitated and heated before, these hot Things will prove so far from being Antidotes, that, by raising up the Orgasm into a Confusion, they will drive Nature out of her Way, exalt the Virofity, and become Deleterious, instead of Salutiferous.

### *Of* INFECTION.

THE chief and commonest Way of taking contagious Fevers, Small-Pox, and Measles, is by Infection; that is, by receiving with the Breath, or thro' the Pores, such virose Corpuscles, as are peculiar for the Breeding of them.

*PLATERUS* was of Opinion, that all morbose, innate, and inherent Venoms, were actually in some Body or other ever since the Fall of Man; and that they lie hid somewhere; and that they never breed anew, or ever happen but by Infection; being carry'd corporeally from one to another by way of Halitus or an Aura.

AND, I think, that Dr. *Sydenham* is somewhere nearly of the same Sentiment; and adds, that a fuitable Diathesis of the Air is it that makes it Epidemic.

NOW, tho' the Air may be polluted and made unwholesome, from Atoms both falling into it from Above, and also rising into it from Beneath, yet I never met with a convincing Proof, that the Air alone, beyond, and out of the Sphere of Activity of the Aporrhæa's of the sick and infected Things, gave the Small-Pox or Measles.

IN Epidemic Seasons, the Atmosphere that we live and breathe in, hath interspers'd Vacuities, fit for the Reception of such Particles, as render our Bodies apt to take Infection.

FOR our Bodies do more or less sympathize with the present tonical Tension or Relaxation, and Contents of the Air; and they act upon both our Spirits, and the Air that is shut up in our Bodies; and if they find Humours and Matter in us easily dispos'd to a further Degree of Fermentation than is consistent with Health, so as to produce a febrile Commotion, the Fever thereupon arising, must of Necessity prove variolous, morbillous, or such as is the respective Nature of the infecting Venom.

IN Epidemic Constitutions of the Air, which produce not the Small-Pox or Measles, but other malignant or venomous Fevers; it so comes to pass, because the particular

ticular Venom taken into the Body, meets not with Seminaries of a Species fit to be impress'd by it.

THE virulent Corpuscles floating in the Air, may be made abundantly more malignant and mischievous, than they are of their own Nature, by meeting and incorporating with other poisonous Particles.

EVEN as Quicksilver, that may be taken inwardly safely enough when crude, unmix'd, and undivided, is, when sublimed and consolidated with Vitriol, Nitre, Salt, one of the most corrosive of all Poisons; for the sharp Points and Edges of the Salts being finely concreted on it, make it prick and cut; and the ponderous and agile Particles of Mercury giving them Weight and Force, makes it penetrate the deeper, and cut the greater Wounds.

THEREFORE in a variolous Time, if the Air have nothing in it but only such Atoms as are analogous to the Small-Pox, without other Venoms, it will produce a regular Small-Pox.

IF, together with the variolous Atoms, it be charg'd with such corruptive Corpuscles as cause putrid Fevers, 'twill breed an anomalous Sort, with its proper Symptoms.

BUT if farther, it be fill'd with such malignant and virofe Particles, as naturally produce malignant and pestilential Fevers, 'twill bring forth such a venomous Sort, as will, proportionably to the Virulency of the Poison, prove more or less dangerous or mortal.

THE Particles which constitute the material and efficient Cause of the Small-Pox, Measles, or other venomous Fevers, are of specific and peculiar Kinds; and as essentially different from one another, as Vegetables,  
Animals,

Animals, and Minerals of different Kinds are from one another.

AND since it is most certain that no Effect can be produced but by its own proper Cause, I am hard to believe, that the Small-Pox or Measles can be produc'd by such Things as have no manner of Affinity with them; such as are Fevers of any other Sort; cadaverous Steams from Men that dy'd of other Diseases; from putrefy'd Carrion; Exhalations from fermenting Minerals; Vapours out of deep Vaults that had been long shut up; from Tempest, Thunder, Earthquakes; nor from foul ways of living, Nastiness, corrupt Meats and Drinks.

*PANAROLUS*, indeed, *Cent. 1. Obs. 18.* relates of a Vault where a great many Children that dy'd of the Small-Pox were laid, which grew so pestilent, that those who went down into it, instantly fell down dead. But that lethiferous Damp, tho' it was first begun by the Small-Pox, did not give the Small-Pox; as is manifest from that it kill'd so suddenly, which the Small-Pox never doth; but it must be a different Sort of corrupted Poison Air there shut up, and compounded of cadaverous and variolous Atoms blended together; and withal being something analogous to human Nature, enter'd in an Instant, and became deadly to Man; but perhaps would not have been so to any other Sort of Animal.

CONCERNING Infection, *St. Austin de Civ. Dei, l. 3. c. 31. p. 152.* saith, that a prodigious Number of Locusts being drown'd in the Red Sea, and cast out upon the Coast of *Africa*, caus'd such a Pestilence by their Stink, that 80000 Men dy'd only in *Massianiffa's* Kingdom; and of the 30000 *Roman* Soldiers that were at *Utica*, there remain'd only Ten alive.

*EUTROPIUS* saith, there dy'd of this Sickness 90000 Men. But concerning this Matter, I believe the  
Air

Air being so poison'd, made that Plague, which might be there before, so very infectious and mortal, and did not truly breed it ; or, if it did, it was a particular Pest *sui generis*.

THAT a Plague should all of a sudden break out, and destroy in one Night 185000 Men, 2 *Kings* xxix. 35. was a Miracle needful at that Time. And such being above the common Causalities and Rules of Nature, are out of our way of Reasoning, and therefore cannot be accounted for.

SOMETHING like this, as to its Suddenness, happen'd at *Oxford* 1572 : As they were actually holding the Assizes, a pestilent Vapour suddenly came among them, whereby the Judge and several Noblemen, and more than 300 others, dy'd within three Days Time.

OF an unaccountable Vapour suddenly coming, I have this Relation from *Richard Humphrey*, my Neighbour, and a Man of Veracity, that on *Wednesday April 27, 1727*, as he and one *Walter* were travelling a-foot from *Canterbury* ; when they came to *Rainham*, they were assaulted with such a strong loathsome Stink, as he thought was like the Stench from a corrupted human Corpse. They were so offended at it, as thinking it was from Carrion in that Town, that they would not stay there to rest and refresh themselves ; but travell'd on for about two Hours, mostly in the Stench, but sometimes out of it, till they came to the Hill that leads down to *Chatham* ; and there they went clear out of it, and smelt it no more.

THE Sky was at that Time clear, without the least Cloud : The Wind was West, blowing over the firm Land, and so this Vapour could not come from the Isle of *Sheppey*, (that is accounted to have an unwholesome Air) nor from the muddy Banks of the River *Thames* or *Medway*, nor from *Rumney* Marshes. It is very observable,

that these Men did not grow sick upon it, and never found they had taken any Hurt.

THAT Carrion-Stenches may infect the Air around for a great Space, appears, in that Kites and Ravens will scent a dead Horse, and fly to it from a long Way off. It's reported, that Vultures have come 50 Miles, and that Eagles have pass'd over Sea, out of *Italy* into *Africa*, to devour Carcasses slain in Battle.

THE *Arabian* Leprosy describ'd in *Leviticus*, sent forth such Multitudes of Effluvia, that not only the Bodies of Men, but even their Garments and Houses, were so infected, as to shew visible red and green Streaks.

AND these were so pernicious and contagious, that the diseased Persons were driven out from among Men in their Camp, their Cloaths were burnt, and their Houses were pull'd down.

BESIDES the contagious Aporrhæa's taken immediately from the Sick, and the Rooms they lie in, they may be convey'd in Beds at Inns, Coaches in *London*, Chairs, Shops, Play-Houses, and even Churches.

THEY may be carry'd from one House to another by Dogs, Cats, Rats ; but especially by Cloaths, or any thing that is lax and porous.

PERHAPS solid Substances, that have not very open Pores and Capacities, such as Minerals, Money, &c. (unless directly from the Sick, whose Fingers may have left a variolous Smear upon it) can hardly be thought to carry Infection.

ACCORDINGLY, concerning pestilent Infection, I have the following from a Gentleman, who resided many Years in the Eastern Countries.

IT is a receiv'd Notion in *Egypt*, and among the *Europeans* there, that Corn, Bread, and Flesh in the Markets carry no Infection; nor any Metals, further than that the Sweat of the Person's Hands from whom it came, may not be dry'd off before the Receiver touches them.

To prevent which, they receive every thing at a Window, in a Basket made (as is the Rope also) of the Leaves, &c. of the Date Trees, which, they say, carries no Infection; and pass every thing, that will bear it, thro' a large Tub of Water before we touch it.

YET *Zacu. Lusit. prax. admit. Obs. 87.* gives this *Exemplum Stupendum*, as he calls it, of Venom sticking a long time to a Sword. A Gentleman kill'd a mad Dog with his Sword. After eight Years he wounded three Men with the same Sword: They were cured of their Wounds, and continu'd well three Years, and then grew mad, and dy'd raving.

AND we know it for Matter of Fact, that *Damascio* Sword Blades will retain for a great many Years the sweet Odour put upon them at their making.

THE Contagion even of the Great Pox may stick in Cloaths, and infect the Wearers, if it be true which *Stalpartius* reports, *Cent. 1. Obs. 100. p. 428.* I remember (saith he) I heard *Wallæus*, our Professor of *Leyden*, say, he knew a young Lady, who, out of a Frolick, put on a Man's Cloaths, and danced in them with a Company of young Folks: The Event was, that afterwards, when she was marry'd, tho' she was never in the least suspected to be dishonest, yet all her Children came forth tainted with the foul Disease; and that was imputed to the Man's Cloaths she had long ago worn.

## Of Eruptive FEVERS

THE variolous Infection will lie sometimes a Month, nay, I myself have known it six Weeks before it broke out; but this is not very common: Perhaps the New and Full of the Moon may have some Influence upon it, to occasion its Expansion at such Times.

DR. *Willis* (of malign Fevers) saith, a Garment may infect some Months, or haply Years, after the Impression.

OF the Pestilence itself, which is the most volatile perhaps of all Poisons, *Sennertus*, *Tom.* 2. *p.* 149, asserteth, it hath been often seen, that from Cloaths and Beds laid up close for many Years, whole Families and Towns have been infected with the Plague.

*ALEXANDER BENEDICT*. *de Peste* reports, of a Bed which having been suspected to be infected, was therefore thrown by into the remoter Parts of the House, was remov'd seven Years after, and rais'd the Plague.

*TRINCAVEL*, *L.* 3. *Conf.* 17. tells of Ropes which had been used to draw away Men that dy'd of the Plague, and were flung behind a Chest; and after they had lain there twenty Years, rais'd a Pestilence, of which 5900 dy'd within twenty Weeks: And that the pestilent Contagion having lain in Linnen fourteen Years, brought forth the Plague in the Year 1558. And he speaks of a Pigeon that carry'd Infection.

DR. *HODGES* *de Pest.* *p.* 65, saith, one fell sick of the Plague a Month or two after Infection taken.

*DIEMERBROECK*, *Hist.* 103. *p.* 257. gives a Relation of one that had been three Months infected, before the Signs of the Plague shewed upon him.

AND now, if so volatile and fugitive a Thing as a pestilential Miasm can be shut up, and lie so long a time  
in

in so loose a Thing as Gloaths, much more may that of the Small-Pox.

I was told, by those who very well knew the Thing, of Linnen that had been folded up and laid by for full half a Year, and upon Opening gave the Small-Pox.

BUT *Diemerbroeck de Pest. p. 19.* will have it, that when the Epidemic Season is spent and gone off, and the Air alter'd, and quite clear of its contagious Effluvia, it persists not in any Fomes, but totally goes away, and infects no more. The Truth and Certainty of which Opinion can no way appear, but by Matter of Fact, which he cannot produce, and which the former Observations seem to contradict.

NOW how such subtle and volatile venomous Particles can lie dormant and unactive in the Body for a long time, I conceive may be in some Sort understood by Gun-powder; which, as long as it remaineth in entire Grains and little Lumps, gives no manner of Disturbance; but when a Spark, tho' it be never so little, toucheth them, each instantly bursts out into a thousand igneous Atoms.

EVEN so, all the while the pestilent Corpuscles continue swimming in the Blood in little Clusters, and an unconcocted State, they are perfectly quiet; but when they come to be fired by contagious Particles taken in, they explode and fly asunder, and blow up, burn, and ruin all within their Reach.

NOW how venomous Corpuscles can be resident in one determinate circumscrib'd Tract, and not be dispers'd, and driven away by Winds or Tempests, great Fires, or Explosions of great Guns, tho' the whole Body of the Atmosphere may be so alter'd thereby, that in a Sea-Fight they will shoot away the Wind, and make a perfect

## *Of Eruptive FEVERS*

fect Calm; this may exercise the Wits of the greatest Philosophers.

BUT I think it is as strange in the Matter of Sound; for tho' the Winds and Guns may for a while overpower the sonoric Particles, yet they cannot drive them out of the Air: And Sounds will arrive at our Ears as soon against the Wind, as with it; only they will not strike with so much Force, nor be so loud.

## *Of Epidemic SEASONS and INFECTIONS.*

**I**N Epidemic Times, the Air must be fitly dispos'd for the Reception of those peculiar Venoms that cause the Diseases then reigning.

AND when that Constitution of Diseases is worn out, it after receives other Particles, which are different, and sometimes direct Antidotes to the former; and then another Constitution commences.

WHEN the interspers'd Vacuities of the Air are fill'd with morbose, and particularly variolous Steams, they are easily communicated to such as are pre-dispos'd and fit for them.

A Pre-disposition in us, is some Suitableness of Atoms and Pores, of Contagion and Ovula; and must be such as are in a specifical Manner discordant to the Spirits and Blood.

AN Aptness will be, when some Procatartic Cause hath bred in us a peculiar Humour, and made such a Disposition in it, that its Pores and Tone having an Affinity with the variolous Particles floating in the Air, it readily attracts, and receives them into it.

AND  
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AND therefore all Bodies are not equally capable of being infected with the same Infections, Air, or Steams. Thus we see Mercurial Unguents will not at all, or with great Difficulty, salivate some Persons, by reason of the Unfitness of the Pores it is to pass, and the Constitution of the Blood it is to dissolve.

ONE Reason why venomous Corpuscles are destructive to some Sorts of Animals, and harmless to others, seems to me (as I elsewhere note) to be, because that particular Venom acts as a Male only on its own proper Female, and the Ovula of its own Kind, and never impregnates any other.

MANY of the Symptoms in an Epidemic Season are the same, or much alike, because of the incongruous Diathesis of the Blood, which the same preceding Intemperance of the Air indifferently communicated to all within the Sphere of its Activity, and consequently gave them an equal Capacity of entertaining the exotic Venom.

### *Of taking INFECTION.*

1. **C**ONTAGIOUS Venoms are most apt to be taken in Summer and Autumn, because in those Times of the Year the Spirits are much exhausted and spent, and are not so able to keep out the hostile Particles; and also the Crasis and Consistence of the Blood is something weaken'd and hurt by the Summer Heats, and plentiful Diaphoresis.

2. **W**HEN the Temperature of the Air is hot and moist, and in such Days as the Mercury in the Barometer is observ'd to fall; for in such Weather, not only the Pores of our Bodies are most open, but the contagious Particles will lie longest; as I have observ'd, that the  
Scent

## *Of Eruptive FEVERS*

Scent of an Hare will then lie longest for Hounds to hunt by ; which Hunters may take Notice of.

3. WHEN the Spirits are confus'd, beat down, suppress'd, and put by their natural Functions, and Operations ; as by Frights, Terrors, Grief, strong Imaginations, &c.

4. WHEN the Body is much out of Order, and a Fever threatens ; by catching Cold, Surfeiting, or in time of a Diarrhæa.

5. IN an Epidemic Season, one in any other Fever, is in Danger to have it turn into the Small-Pox.

### *Who are most apt to take INFECTION.*

1. **T**HOSE whose Pores and Receptacles either of the Skin or Lungs, (those common Avenues and Places of Reception) are suitable to the Figures and Bulk of the venomous Atoms.

2. THOSE whose Blood harbours such Impurities as are something analogous to the virulent Taints ; for there must be a Similitude and Fitness between the Receiver and Received ; even as there is between the Mortise and its Tenant.

3. SUCH whose Make, consisting of fine Fibres, are naturally of a weakly Constitution ; whose Texture and Tone, and open Pores, are not so resistive of hostile Impressions and Assaults from without.

WHEREAS those of a robust Make, whose Fibres are strong and springey, and whose Habit of Body is good and sound, these, with less Hazard of Health, are able to endure Changes of Air, and to resist and beat off Enemies.

BUT

BUT when a Fever hath once got in, and seiz'd such an Athletic Person, the Combat will be fought with great Violence, and commonly prove fatal.

THUS very frequently we see such die of the Small-Pox, when those that are of a puny weak Constitution, have a more moderate Fever, and usually escape.

4. SUCH as have rich hot Blood, and are apt to Fermentations, Flushings, Erysipelases, Fevers.

5. THOSE that have liv'd high, have heated their Blood by drinking spirituous Liquors, and Surfeiting.

6. SUCH as are weaken'd and wasted by Sicknefs, hard Labour, or low Living.

7. SUCH as have weak Spirits, and strong Fancies ; that are apt to fall into Frights and Terrors, Sadness and Sorrows ; are Hysterick, Hypochondriac ; and all such whose Spirits are not able to oppose the assaulting Enemy, but fly, and let him in.

8. SUCH as have open Pores, and thin Skins ; soft flabby Flesh ; and are tender, apt to sweat, and take Cold.

9. CHILDREN, because their Nature is too weak to resist and keep out contagious Spicula ; for their young Fibres are apt to be relax'd, and so leave open the Doors and Pores of the Skin. But *Stalpartius* (*Cent. post. Obs.* 43.) saith, it is certain that *Italian* and *Spanish* Children seldom have the Small-Pox.

THE Small-Pox was wont to be accounted a Disease of Children, and Authors use to treat of them under that Head ; but Experience tells us, it commonly seizeth Adults also, and even very antient People. *Thiermannus*  
P speaks

speaks of a Man that had the Small-Pox at 70 Years old, *Lieburgius* at 80, *Borellus* at 118.

YET grown Persons are less obnoxious to Contagion, because their Spirits being more robust, oppose the light Miasm, and keep it out ; or if it be a little got in, drive it out before it have Power to enter into the Blood.

10. THOSE that come out of the fresh Country to *London*, and have not been used to that Air, are apt to catch the Small-Pox presently ; for besides the strange Motion that the vast Concourse of Men, that Hurry of Business, and infinite Noises, will have on the Mind, the Breathing of the City Air, which is so compound a Body, and so different from that in the Country, will commonly put the Body into a Flush, (especially in hot Weather) and that Commotion of the Blood will cause it to suck in the variolous Ramenta flying in the Air.

11. WOMEN about the monthly Times may easily take the Infection, especially if they are then usually wont to be much indispos'd.

12. WHETHER those that have running Sores or Issues are not more obnoxious to Infection on that Account, I am not absolutely resolv'd, but suspect they are ; and upon this Supposal, in times of Pestilence it hath been advis'd to dry up Issues.

AND *Crato* writes to *Jordan* (in *Epist.* 1. *Scolt.* 2. *Collect.* *Epist.* 139.) of a Sort of a Plague in *Moravia*, which seiz'd only such as were cupped and scarify'd, and that Way the Venom made its Entrance into the Blood and Spirits ; as we see now a-days it doth by Inoculation. *Th. Jordan* wrote a Tract concerning this Pest, which *Schenckius* hath inserted into his 6th Book of Observations.

13. WHETHER those, who, when Infants, had not the Red Gum enough, or other Breakings out in their Heads, are not more susceptible of Infection than others, I cannot positively determine; but this Supposition seems to me to smell strong of the *Arabian* Hypothesis, concerning maternal Taints before Birth.

BUT we know assuredly by Experience, that the Itch will not prevent the Small-Pox, neither will the Small-Pox cure the Itch.

14. SOME say, those are not apt to catch the Small-Pox, nor breed them, whose Parents never had them; but I think common Observation contradicts this Opinion.

15. SOME believe the having had the Measles, or other Sorts of variolous Distempers, will either wholly prevent the Small-Pox, or, at least, render it kind and regular; but they have no Ground for this Conceit, since every Cause produceth nothing but its own proper Effect.

16. SOME have held, that Kindred and Affinity of Blood will dispose Men readily to catch the Small-Pox from one another; not only because of a great Concern of Mind for near Relations, but of an analogical Constitution; for they having a certain Likeness and Propriety of Nature, that Venom which is actually operating in one, may well work likewise in the other.

As for Brothers and Sisters taking the Small-Pox at a great Distance from one another, I shall not mention it, because the Doctrine of distant Sympathies and Antipathies, that was much in Vogue in Sir *Kenelm Digby's* Days, is now generally laid aside.

*Of FEVERS.*

**A** Fever is a disorderly Commotion of the Blood, caus'd by a preternatural Irritation of the Vital Spirits, which violently expanding themselves, and exagitating the Mass, make it boil, rarefy, swell the Vessels, inflame the Parts, and circulate rapidly and unequally.

It is usually attended with great Heat, Thirst, quick Pulse, and difficult Respiration.

THIS may in some Sort be conceiv'd by Wine, which, if Fat, or any other very disagreeable Substance be dropp'd into it, will boil so violently, as to run out of the Vessel; or, if it find no Vent, burst it open.

THIS Irritation of the Spirits is made either by some accidental Cause, such as Passion, Pain, great Labour, &c. when the Blood itself is really in no manner of Fault;

OR by something in the Blood, which being heterogeneous and disproportionate, and therefore confusedly jumbled, and not kindly taken into its Substance, so as to be assimilated, jostles the Spirits, and drives them into Disorders and Explosions.

THESE febrile Commotions continue, till either,

1. THE Spirits are appeas'd again, and restor'd to their regular, usual, and natural Way of Circulation:

2. OR till the hostile Matter be subdu'd, evenly dispos'd of, and incorporated with the Mass:

3. OR till the Matter be extricated and expell'd, so as the Blood may be clear and clean; and all its Principles,  
and

and whole Substance may be restored, re-inflated, and re-settled in their former Situation, proper Consistence, and natural Way of Circulation and Operation.

4. BUT if these Things cannot be effected, then the febrile Commotion never ceaseth, till the Spirits being vanquish'd, exhausted, and spent, the Functions of the Heart and Lungs fail ; Circulation goes on heavily ; the Bands of Continuity break ; the Mass becomes putrid and inanimate.

AND at length, it commonly happens that the Animal and Spontaneous Spirits also suffer, languish, and perish ; and then all Vitality and Animality ceasing, the human Engine, like a Clock broken all to Pieces, goes no more.

UPON these Foundations I would build the Doctrine of Fevers.

I DIVIDE them into three Sorts, 1st Intermittents, 2d Continueds, 3d Continuals.

### I. *Of* INTERMITTENTS.

THESE come by periodical Paroxysms ; and when they are regular, leave the Party in a manner free, and perfectly well between each Paroxysm.

THEY are Quotidian, Tertian, Quartan, and their respective Duplicates ; which I explain thus :

IF the Ague return every Day, but each other Fit answers not in the Times of Accession ; *viz.* one comes a *Sunday* and *Tuesday*, at 8 in the Morning, and the other on *Monday* and *Wednesday*, at 2 in the Afternoon ; tho' this Ague invades every Day, yet it is not a Quotidian, but a double Tertian.

IF

## *Of Eruptive* FEVERS

IF it cometh two Days together, and misseth the third Day, and each other Fit correspond as to Time, one coming a *Sunday* at 8 in the Morning, and the other on *Monday* at 2 in the Afternoon, and it quite misse *Tuesday*, and so forward in the same Manner, it is a double Quartan Ague.

### II. *Continued* FEVERS.

THESE, while they continue such, go not so perfectly and totally off, as to let the Party feel himself any thing well at any Time, till they do so for good and all.

YET have they their plain and distinct Exacerbations and Remissions, like those that are Intermitting, and usually observe pretty regular and customary Hours.

I CALL these, from the Times they come and go at, Continued Quotidians and Tertians; for I think they scarce ever are Quartans.

THEY sometimes end by a visible Crisis, but more commonly suffer a Change; and being of a middle Nature between Intermittents and Continuals, if Nature prevail, they dwindle into the former; but if it bear not up well, run into the Class of Continuals.

### III. *Continual* FEVERS.

1. THESE proceed without Apyrexies, or even any manner of observable Remissions, till either they growing milder, turn into Continueds or plain Intermittents; or, 2. Till they having run thro' all their Stages of Invasion, Augment, State, and Declination, then

then cease, and go off; or, 3. Till they have extinguish'd Life.

*Of the CAUSES of Continual FEVERS.*

THE efficient and operative Cause are the Vital Spirits; the material and subjective Cause are the Globules, or Blood itself.

FOR when the Spirits have fired them, they drive all the Particles of the liquid Mass into great Exagitations, and preternatural Disorders; the Blood boils and rarefies, and runs rapidly; the Flesh burns, Respiration grows quick and painful; the Pulse beats high; the Urine becomes red, and all is every where in a Combustion.

*Of the SPIRITS.*

WHEN they are irritated a little by some flight Cause, such as Passion, Labour, Pain, Watching, &c. and the Blood at the same time in good Order, they will not fly into such Furies, as much to exagitate and fire the Globuli, but be soon appeased; and so the little Fever that was raised, easily and quickly sinks, and all is quiet again. This I take to be the Manner of an Ephemera.

WHEN the Spirits are so provoked as to rage, and raise a considerable Combustion in the Blood; yet not so great an one as thoroughly to dissolve its Crasis, and separate its Principles, the Fever caused thereby, will be that which is called a Non-Putrid Synoch.

IF the Spirits be over-match'd by the hostile Matter, and put into great Disorders and Flights, then all the vital Functions will be badly performed.

## *Of Eruptive* FEVERS

IF so many of the vital Spirits be destroy'd, spent, and killed, that they cannot flow in a sufficient Quantity to the Brain, to be there distilled, rectify'd, new made, and turned into Animal Spirits; then Trembling, Spasms, Coma, and the like dire and frightful Symptoms will arise, and the Animal Functions will fail.

BUT further yet, if those Spirits which are for the Performance of spontaneous Motions, be so affected as not to be any longer able to continue Pulsation and Respiration, the Party must of Necessity die.

### *Of the BLOOD, or the Material or Subjective CAUSE of Continual FEVERS.*

IT is such, either, 1<sup>st</sup>, of Itself; or, 2<sup>dly</sup>, by reason of Matter taken into it.

#### I. *Of ITSELF.*

1. **WHEN** there is a Plethora *ad vires*; that is, when it is increased to so great a Quantity, that it hath not sufficient Room, but throngeth the Vessels, circulateth troublesomly and unevenly; and throweth not off its Recrements as it ought to do.

2. **WHEN** it is too rich, and over-stock'd with Globules and Oleose Principles, whereby it is apt to take Fire, as it were, upon every Accident, and small Error of Life.

3. **WHEN** the Serum is become Acrid, and Pungent, and Irritative, which, perpetually provoking the Spirits, driveth them into Ataxies, and the Blood into Effervescencies.

4. **WHEN**

4. WHEN the fibrous and mucilaginous Parts abound in the ferous Latex, and are beyond due Proportion to the other Elements ; for they being excocted into solid Size, lay Obstructions in the capillary Passages, and hinder Circulation ; whence arise Extravasations, great Heat and Pain, Inflammatory Fevers, as Quinsy, Pleurisy, muscular Rheumatisms, &c. in which Cases the Blood let out into Porringers is always seen to be fizy.

5. WHEN the Blood insensibly and gradually of itself, without taking in of any thing *ab extra*, groweth foul and corrupt, and full of discordant heterogeneous Matter, that cannot incorporate rightly with the Mass, nor circulate kindly with it.

FOR then the Spirits meeting with Obstacles, and Offence, will fly and flash violently, and the ill-sorted Liquids will run into Confusions, Deliquiums, Tumults, and Fevers.

THIS Depravation of the Blood within itself, may proceed from divers Causes.

1. FROM ill Courses and Customs of Living, in respect of the six Non-naturals ; whence bad Digestion, crude and other vitiated Humours, Cacochymia, Plethora, &c.

2. FROM ill Secretion of Recrements, Retention of Menfes, or Excrements of any Sort.

3. FROM Humours congested in the Glands, Viscera, or Habit of the Body, and there retained till they take up an aliene Nature, from scrophulous, gouty, or other Tumours or Ulcers supplying Matter, and pouring it into the Blood.

4. FROM Transpiration stopped ; for in that Case the veterane Serum, after many Circulations, having served

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## *Of Eruptive FEVERS*

its Time, and done all that it was to do, becomes of no further Use in the Blood ; and therefore is expelled into the cutaneous Glands and Pores of the Skin : And being there in a State of Extravasation, void of Spirits, inanimate, and corrupted, grows salt, sharp, and directly noxious.

AND if when it is such, it be hinder'd from transpiring, and evaporating off, and instead thereof, be repelled, and licked back again into the living Mass, it will be as offensive to Nature as cadaverous Matter would be, and so must necessarily foul the Blood according to its Degree of Depravity.

AND thus much of the Blood itself, without Mixture with other Matter, being the Material and Subjective Cause of continual Fevers.

### *Of Continual FEVERS, caused by Matter taken into the BLOOD ab extra.*

IT is of three Sorts, 1st Benign, 2d Malign, 3d Venomous.

#### I. BENIGN MATTER.

IT is such as, having nothing at all of a virose venomous Nature, is only incongruous and disproportionate, and therefore being unfit to be mixed, and united with the Blood, gives it Disturbance.

If it be as yet seated in the Lymph, and scarce got in among the Globules, it will notwithstanding provoke, and perturb the vital Spirits, and so exagitate them as to stir up an Effervescence, which ceaseth again as soon

as the Matter can be concocted and thrown out by insensible Transpiration, Sweat, Urine, Stools, &c.

FOR thereupon the Spirits will be appeased, and quietly resettled in their natural Temper, and usual Manner of Expansion and Irradiation.

I apprehend this to be the Case and Manner of that Fever called an Ephemera, or Flurry of one Day ; tho' it may proceed also from the Blood itself, without aliene Mixture, as said before.

IF the Effervescence continue longer and rise higher, insomuch that not only the Spirits are irritated, but the Lymph be over-boiled ; and also the Globuli are exagitated in some Parts, but not every where, and thoroughly kindled in their inmost Particles, it then causeth that which is called a Simple Synoch, or a Non-Putrid Fever.

BUT if it proceed so far as to be boiled into the Substance of the Blood, and be intimately mixed in it, and break the Bonds of Connexion, and let loose the Globuli, and cause them to cluster together, grow turgid, and fall a burning and diffusing Inflammation through the whole fluid Mass, whereby its Crasis is dissolved, its Tone broken, and the vital Functions impair'd, it produceth that Fever which is called a Putrid Synoch.

## II. MALIGN MATTER.

IT is such as is excessively Acrimonious and Operative, and highly disagreeable and offensive to both the Vital and Animal Spirits, and Blood, but yet is not so absolutely Venomous, as to be directly tending to the Extinction and utter Destruction of them.

WHEN such Matter being Heterogeneous, and utterly unfit to incorporate and circulate, remaineth in the

Blood, altering the Disposition of its Parts, dissolving, coagulating, or otherwise corrupting them, and troubling their Motion, and confounding the Action of the Vital Spirits ; such is their Activity, Force, and Vehemence, that they will fly out into violent Agitations and Effervescencies, so as to stir up the Globuli and the other Principles, and make the Mass of Blood as 'twere flame, and the Body to burn.

AND these Turbulencies will never cease, till either the Matter be refringed, softened, edulcorated, and rendered mild, and fit to mix in, and flow peaceably with the Blood.

OR if the hostile Matter prove untractable, immixible, and unassimilable, and to the utmost Degree provocative, then the Vital Spirits will fly into disorderly Explosions, and never come to Rest, till they have subdued, extricated, and expelled, by some Way or other, the Enemy.

OR else if they fail in their Attempt, and are not able to accomplish their Work, then they become vanquish'd themselves, and Nature giving out, they fall in the Conflict.

### *A* RECAPITULATION.

1. **B**Y an Ephemera, I mean such a Fever as is caused by only a Disturbance of the Vital Spirits, wherein the Lymph is but little, and the Globuli scarce at all, alter'd.

2. BY a Simple Non-Putrid Fever, such an one as affecteth both the Vital Spirits and Lymph ; and tho' it heats up the Globuli, and grows pretty sharp, yet it dissolves not the Crasis of the Blood. This Fever is not very durable nor dangerous, unless it turn to a Putrid.

3. BY

3. By a Putrid, such an one as not only acts upon the Vital Spirits and Lymph, but the whole Mass of Blood also, dissolving its Crasis, inflaming the Globules, tearing asunder its Principles, and bringing them to a State of Corruption and Putrefaction.

4. By Malignants, such Fevers as, besides its Devastations, which in common with Putrids, they make in the Vital and Sanguineous Province, invade also the Brain and Nerves, and animal Province, and commit Outrages there.

AND so I make the Difference between Putrid and Malignant Fevers, to consist mainly in this, That Putrid affect primarily and principally the Vital Spirits and Blood ; but Malignants, together with these, the Animal Spirits.

### *Of PUTRIDITY and MALIGNITY.*

**B**ECAUSE they may, and often do, happen together ; I offer the following Observations and Rules, which perhaps may prove of some Use in Practice.

1. IF neither Putridity nor Malignity be great, there is no Danger, nor ill Symptoms, nor Difficulty in the Cure.

2. IF Putridity be much, and Malignity not intense, the Fever lying harder upon the Vital Functions than the Animal ; Phlebotomy, (if used in Time) Diluents, and Refrigerants will be proper.

3. IF Malignity surpass Putridity, the Fever not running up high, and not troubling the Vital Spirits much, but remarkably disordering and weakening the Animal Functions ;

## *Of Eruptive FEVERS*

Functions ; In this Case Bleeding is generally speaking hurtful : Attemperants, Refrigerants, and Paregorics do more harm than good ; but warm Cordials, Alexipharmics, Diaphoretics, and Epispastics, are the proper Remedies to be insisted on.

4. IF Putridity and Malignity both be in a high Degree, and the Vital and Animal Functions also be together at the same Time assaulted, and thereupon the Fever causeth great Heat and rapid Motion of the Blood, and great Disorder, Oppression, or Explosions in the Brain, the Case is hazardous and difficult.

FOR the Indications being quite different, and almost opposite, it will exercise the best Thoughts of a Physician exactly to distinguish, and rightly to judge what he ought to do, and how to time it.

FOR the Ardour, Acrimony, and Rapidity of the Blood, call for Refrigerants, Diluents, and Edulcorants ; but the sinking of the Animal Spirits, for warm spirituous aromatic Cordials, volatile Salts, Cephalics, Epispastics, and Applications to the Feet.

### *Of the Third Sort of MATTER being Venomous.*

MY settled Opinion is, that in regard every Effect is necessarily such as its Cause, it must needs be, that every Sort of venomous Fevers is produced by its proper and peculiar Species of Virus.

AND that the Manner and Symptoms of every such Fever is not so much from the particular Constitution of the Sick ; as from the different Nature and Genius of their specific Venom which caused them.

AND

AND I conceive that venomous febrile Matters differ not in Degree of Intensity only, but in Essence, and *Toto Genere* also; and that venomous Fevers are for the most Part contagious, but the malignant seldom so.

OF these Fevers I reckon Three Sorts.

*The First Sort of VENOMOUS FEVERS.*

THESE Fevers discharge themselves by a long Crisis, by way of single Spots, broad Efflorescencies, or elevated Pustles, and are all of them more or less contagious.

THEY are produc'd by such a Venom, as is of its own Nature mild, and almost harmless; yet if it be overheated, or otherwise heighten'd, it will produce horrid Symptoms, and raise up such Fevers as are more certainly killing than even the Plague itself.

SUCH are the Small-Pox and Measles, and the several spurious and subaltern Kinds; and of these, exclusive of all other Fevers, I design to treat *ex professo* in due Place.

*The SECOND SORT.*

THERE are many Varieties of these Sorts of Fevers according to the different Matters which produce them in Epidemic Seasons, and in several Countries.

CONSTANTINOPLE and Grand Cairo, and other great Cities of the East, are said to be never free from the Pestilence; but I rather think they are venomous Fevers of other Kinds that infest those Places, where  
there

*Of Eruptive FEVERS*

there are great Numbers of People, and little Care taken to prevent Infection.

IF it were really that terrible King of Diseases, it would not be limited by any Laws, nor come and go away at set Seasons.

THEY are caus'd by Poisons that are more ferine and noxious than that last mention'd ; but yet are not so terribly rank and deleterious as is that of the Plague.

THE Nature of these Fevers is to be epidemical, multiplicative, contagious, and extremely dangerous.

THEY do not usually go off by any fair Crisis, tho' they frequently put out pulicar, petechial, and other Spots ; for when such happen, they are generally symptomatic and irregular, both as to the Times of the Disease, and Places of the Body, and never bring any Relief to the Sick.

MALIGNANT Fevers, and those that are venomous, have many of the same Signs and Symptoms in common, which I shall here recount.

ALL these happen not in any one ; but from some of them we may be enabled to form a diagnostic Judgment ; always remembering, that the Malignant affecteth principally the Vital Spirits and Blood, but the Venomous chiefly the Animal Spirits and Nerves, from almost the first Onset.

SIGNS

SIGNS of *both* MALIGNANT *and* VIRULENT  
FEVERS.

1. **W**EARINESS and Weakness, especially in the Arms and Legs, without any evident Reason for it.
2. HORRIPILATIONS shivering Cold, and flushing Heat succeeding one another several times by Turns.
3. No very great constant Heat at first.
4. **H**EAT and Thirst in the inward Parts, and at the same Time Cold in the outward.
5. **P**ALMS of the Hands hot and dry, when the Backs of the Hands are cold and clammy.
6. **V**IOLENT Headach, with Pain in the Eye-balls, and in the Limbs.
7. **E**XQUISITE Pain in the Back and Loins; sometimes with such torturous convulsive Shoots, that the Sick cannot forbear crying out every Time they come.
8. **D**ULLNESS and Swelling of the Eyes, sometimes with involuntary Tears.
9. **S**OMETIMES pertinacious Watchings, and Delirium; sometimes unconquerable Drowsiness.
10. **S**LEEP short and broken; not refreshing; disturb'd with Dreams, and Frights, and Terrors; a Sense of Fires flashing; of being murder'd, and awaking sick.

## *Of Eruptive* FEVERS

11. HEART-burning ; Sicknefs at Stomach ; Nausea ; Vomiting, without bringing up much Choler ; Hiccough.

12. THE Brain, Nerves, and Animal Spirits particularly and grievously affected ; tho', at the same time, the Fever seem not to run high.

13. OPPRESSION and Pain at the Breast, Sighing, Inquietude, Anguish, Fainting.

14. SWEATING towards the Beginning, without any manner of Relief thereby ; in some Parts only, especially the Forehead, Backs of the Hands, upper Parts of the Body, and not the lower.

15. RED Efflorescences, either all the Body over, or in large Area's, smooth or rough.

16. SPOTS of divers Sorts and Colours, at irregular Seasons of the Distemper ; sometimes seven or more Days after the Onset of the Fever ; and upon Appearance of such, the Sick grows not a whit better, but plainly worse.

17. URINE like that of People in Health, and yet the Party is at the same time extremely sick, and hath great Complaints ; sometimes Limpid, like that of Hypochondriac and Hysterical Persons ; sometimes Turbid, like that of Beasts.

### *The Third Sort of* VENOMOUS FEVERS,

IS the Pestilence itself, or Plague. This is the most intense, virofe, and killing of all Fevers : So operative and powerful, that sometimes it wants not the Assistance of disorder'd Blood and Humours ; but falling directly (like Lightning) on the Animal and Spontaneous Spirits,

Spirits, without raising any sensible Ebullition, or even the least increas'd Fermentation, without any Warning or Notice given, strikes a Man down dead at once.

BUT at other Times, tho' it kindles up but a mild Sort of a Heat, yet it strangely overpowers the Vital Spirits, gets in among the Globules, breaks them into the minutest Atoms, cuts the Fibrillæ all to Pieces, disorders the Compages of the Mass, throws out purple, livid, black, or blue Spots, Wheals, Tumours, Buboes, Carbuncles, utterly kills both Animal and Spontaneous Spirits, corrupts the solid Parts, and turns the Body into Carrion before it be quite dead.

*Of CUTICULAR ERUPTIONS without a FEVER.*

THE Matter of these is sometimes only the ferous Part of the Blood grown salt, sharp, corrosive, or some way or other aliene, and unfit to remain any longer in the Mass. Instances of which are Blisters, Itch, Herpes Miliaris, the Crystal Small-Pox, &c.

SOMETIMES that Serum, being charg'd with such Feculencies as raise no Fever, yet cannot circulate freely, is thrown out leisurely without any Sickness or Trouble; and this is the Case of Scurvy Spots.

BUT in Eruptions that have any thing of Redness, there is a Mixture of Globules with the Serum; for nothing in the Body is Red, or can give Redness, but the Globules.

WHEN they are broken small, if their thinner and finer Part overfloweth the Cutis universally and uniformly, it causeth a red Efflorescence to be seen all over thro' the pellucid Cuticula.

SOMETIMES it spreadeth large Area's, and leaveth void Spaces between them, and appeareth in broad red Patches.

SOMETIMES it cometh out in several little distinct Particles ; and then it produceth either Spots or Pustles.

WHEN the Blood is pure, without any ill-agreeing Matter in it, yet its meer Heat and Impetus will sometimes push out Colours and Spots, which, as soon as that Impetus ceaseth, will immediately disappear, and go off again, by returning into the Mass, and joining with it, as Drops of Water mix in with Water. This seems to be the Case of Blushing, rubefying the Flesh with Rubbing, Ague Spots.

WHEN the C<sup>o</sup>mbules flow languidly thro' the small Vessels, and swell them, but at the same time suffer little or no Extravasation, the Redness will continue there till the Blood can be reforc'd, and the containing Vessels fall and shrink again to their natural Size : Blood-shot Eyes, and slight Inflammations are Instances of this.

WHEN there is a small Extravasation, the Blood having a little broke out of some of the Capillaries, and enter'd into the collateral carnos Fibres, and being there, as 'twere, out of the Canal and Current of Circulation, is not vividly mov'd, it will coagulate into Gore, and become black and blue Vibices. This I take to be the Case of Contusions, where the tender Vessels and hollow Fibres are hurt, disorder'd, or broken.

THESE livid Spots, if the Portions of Blood causing them continue yet living, that is, have Vital Spirits flowing into them, will be dissolv'd by the Animal digestive Warmth, and be return'd again into the living Mass, and growing yellower, will gradually disappear.

BUT  
†

BUT if these Portions rest there till they have lost all Irradiation of the Spirits, they will become dead Gore, and can never be admitted into the Blood any more ; but will turn into purulent Matter, and go off in Abscesses ; and if there be any great Quantity of it in any Part, it may suffocate natural Heat, and produce Mortification, especially if any malignant Matter be mix'd with it.

OF all Eruptions, it is to be observ'd, that the brighter Red they are, so much always the better they are ; for then they consist of living spirituous Blood ; but the darker they are, (as Purple, Leaden, Black, Blue) the greater Putrefaction they manifest, and the greater Danger of Mortification they portend.

### *Of FEBRILE ERUPTIONS.*

THESE are mostly caus'd by certain Matter that is disagreeable to the Blood, which opposeth the Mixture of the Spirits, troubleth the internal Motion of the Liquids, and thereby exciting a preternatural Conturbation, is separated from the Mass, and thrown out into the Superficies of the Body.

SOMETIMES the Matter is not of so very disagreeable a Nature, as to irritate the Spirits, and disorder the Blood much ; and then, tho' it circulate not quietly with it, and must be thrown out, yet it exciteth little or no Fever. Thus it is in the spurious Sorts of Poxes, and in the mildest Measles and Small-Pox.

SOMETIMES it is subtiliz'd and exhal'd away, as in the spurious Kinds and Measles ; sometimes it is suppurated, and turn'd into Abscesses, as in the common Small-Pox ; sometimes, after it hath been out for some Days, and begun to be putrify'd, it is reformed again into the  
fluent

fluent Mass : And this I take to be the Case of the variolous second Fever.

IN Case of the Small-Pox, when the variolous Matter hath intimately join'd the Globuli, Atom for Atom, and, with each of them, form'd such Moleculæ, as cannot circulate thro' all the minute Passages quietly ; the Force of the Fever rais'd thereby, will push them out into the external Parts, and produce Pustles.

AND there, if they be not totally shut off from the Blood, and depriv'd of all Communication with it, they will be continually fed with Serum and Steams, and turn'd into Abscesses ; which, by the warm Bath of the Blood, will be gradually brought to Maturation. Thus it is in a common regular Small-Pox.

BUT if the Matter be so virofe, as to hurt the Vigour of the Spirits, dissolve the Crasis of the Blood, cause Colliquations, very much break the Globules, and weaken the Tone of the solid Parts, it will cause an high confluent Sort.

FURTHER, if the morbose Matter be exalted to so high a Degree of Venenosity, as to putrify the Blood, break many of the Globules into their Minima, and with them form caustic Moleculæ, it will force out petechial Spots.

THESE Spots, when vivify'd with Vital Spirits, appear of a lively bright red Colour, and may be sometimes recoverable.

BUT when they come out at first (or afterwards turn to be) deep Purple, or dusky, they are so for want of Spirits, and then they are extremely dangerous ; but when they are blue or black, they are quite depriv'd of quickening Spirits, and always portend Death.

AND

AND when all the Globules are universally, thro'out the whole Mass of Blood, broken into their least Atoms, and are poison'd and set a Fire in all Parts, then they cannot be contained any longer in any Vessels, and will burst out with a darkish Efflorescence, and dreadful Hæmorrhagies every where.

THESE Eruptions are either flat Spots, broad Efflorescences, or elevated Pustles. Under the former I rank many Sorts, but particularly the Measles, and all its Kinds: Under the latter the Small-Pox, and all its Kinds.

THERE are many of both Sorts not distinctly describ'd, nor particularly named in Books; the Reason of which is, because most of them are such inconsiderable and safe Distempers, that Physicians are scarce ever called into them, but the nursing Women have the whole Care of them: Some of them are as follow;

*SPOTS in AGUES, and from WOUNDS.*

**PECKLIN**, *L. 2. Obs. 18. p. 250.* tells us, that sometimes at the going off of a Tertian Fit, before the Sweat comes on, Spots will appear, which by the Sweat will be carried off again.

I HAVE seen, saith he, Exanthemata without any manner of Danger; the first Time in two, that were wounded in their Breasts, a Redness flushed all over the Body, like a fine Crimson, which went in again in four Hours.

A SERVANT Maid having a Quotidian Fever, was painted all over with a delicate Redness for three Days running, which came and went away with each Fit.

AND

AND likewise a Noble Lady having a Tertian, came out all her Body over with a Redness, which, as the Fever remitted, vanish'd.

HE saith this is void of all Danger, and is rather a ludicrous Spectacle than an ill Symptom.

SUCH as these happen when the Blood is violent hot, (during the Fit) and boils, and rarefies, and requires more Room, and dilates the capillary Arteries, and there-upon the grosser Globuli being rubbed asunder, and divided, their minute ones are driven into the Skin, and make it red, as rubbing the Flesh will do even without the Fever.

BUT having there no ill-sorted Corpuscles among them to hinder Coalition, as soon as ever the Commotion and Impetus is down, they unite again into common Globules, as misty Bubbles do into Drops of Water, and pass back into the Vessels, and circulate as before.

### RED GUM.

CHILDREN, for the most Part within 14 Days after Birth, are wont to have large and red Spots all over their Skin; and if this Redness does not come out freely, or if it disappeareth sooner than it ought, for the most Part a white Thrush in the Mouth ensueth: in some it continueth coming out many Weeks.

THESE Spots are caused by their Blood being render'd foul, from Impurities it contracted in the Womb, which Nature endeavoureth to send off by an Efflorescence.

SCARLET FEVER.

**B**ECAUSE it chiefly seizeth Children, and comes with a Cough, it something imitates the Measles; but forasmuch as it is not contagious, and seems to have nothing virulent in it, I rather chuse to allow it a Place among benign Fevers.

THE Party at first shakes and shivers, but is not very sick; the Skin is filled all over with red flat Spots, (yet something roughish to feel to) which are much thicker set together, broader and redder than the Measles.

THEY make the Body all over of a Scarlet Colour; continue two or three Days and then vanish: So the Cuticle breaking and peeling off, there remains for a Time a little Scurfiness, which looks whitish, as tho' Meal had been sprinkled all over the Body.

AT this Time of shedding the Cuticula, there is sometimes great Itching. Dr. *Sydenham* saith it is the Name of a Disease, and scarce deserves to be accounted any more.

*ETTMULLER*, *Tom. 2. p. 416.* saith, it is a Fever more or less acute. After two or three Days a certain Redness (without almost any raising of the Skin) breaks out, sometimes in Spots, sometimes in broad Patches, like an Erysipelas; at first about the Neck, Shoulders, Breast, and then the Face, and whole Body, and causeth it to swell a little.

BUT in two or three Days more, the Tumour sinking by Degrees, broad Spots appear again, which about the seventh Day quite vanish, and the Skin peels off. This seemeth to be something different from that before describ'd by Dr. *Sydenham*.

*A* RASH.

**T**HIS Name of a Disease we never have heard of till of late ; it seems to me to be no other than a small Sort of Scarlet Fever, which pusheth forth heterogeneous Matter into the Skin ; but being not Malignant, it is quickly dissipated and evaporated, and is not contagious nor dangerous.

*The* PURPLE FEVER.

**I**T may seize any one indifferently ; but most commonly taketh lying-in Women, and new-born Infants.

THE Fever begins like a Synoch, with first Cold, then Heat, great Anguish, Inquietude, Redness of the Eyes, sometimes Headach, always Watching, a little Dampness about the Forehead, Back of the Hands, Breast : The Urine is like that of People in Health.

IN Child-bed Women the Lochia are diminish'd.

THIS Distemper thus proceeding, about the sixth Day there is felt Heat, Itching and Pricking about the Breasts, Shoulders, Back, and by Degrees all the Body over ; upon which the Skin becomes Red, and a little Roughish.

IN the State of the Disease, the Fever and all Symptoms are increased, and the Roughness turns into miliary Efflorescencies, more or fewer, which, if the Air be admitted into the Bed by heaving up the Cloaths, are most apt to strike in ; and then follow Anguish, Difficulty of Breathing, extreme Prostration of Spirits, and commonly Delirium, Convulsions, and suffocative Catarrhs.

It goes off sometimes (tho' not often) by a Diarrhæa, sometimes by insensible Transpiration, or by Sweating : In Child-bed Women often by Lochia, the Spots wasting by Degrees, and then the Skin peeling off.

### SCORBUTIC PURPLE FEVER:

**P**ECHELINUS, *L. 2. Obs. 18. p. 250.* saith, there is a Sort of Fever called *Purpurata*, which shews itself in various Spots, pale, redder, dusky, and at length black, which is caused from a Fermentation arising from Scorbutic Salts, thrusting the Matter out into the Skin, where it is easily dissipated : He tells us he is assured it is malignant, and sometimes dangerous.

### *The* NORTHERN PURPLE FEVER.

**T**HE same Author informs us, *L. 2. Obs. 17. p. 245.* that in some Places of *Cimbria*, lying to the North Sea, there reigns an annual purpurate Fever, which every Stranger, who hath not had it before, most certainly catcheth ; for it is very contagious, and when once it is gotten into an House, it runneth thro' a whole Family. Red Spots, he saith, are better than yellowish ; but black are for the most Part mortal.

### ROUGEOLE.

**I**N this Distemper great broad flat Patches, as red as an Erysipelas, thrust out so as to cover most Part of the Body, whole Limbs, the Arms, Legs, Back ; and this Redness disappears usually in few Hours, and returns again by Fits, according as the Fever flyeth into Exa-

cerbations, and the boiling Blood sends morbose Exhalations to the Superficies: These are said not to be malignant.

*CHESENEAU* saith he saw such a Distemper, but gives no perfect Description of it. He thinks it is seldom seen, except in hot Countries; yet I am confident I met with it many Years ago in our Country.

### *The ASPREDO.*

**I** MAKE bold to give it this Name, to distinguish it from other Eruptive Fevers, which Authors have mentioned with much Confusion, and fixed no specific Names to.

*MARTIANUS*, (in *Hippocr. Epidem. Sect. 3.*) saith, it is a Distemper so familiar to Children, that (like the Small-Pox) it letteth none escape it.

It is a Sort of Roughness, not much unlike the Sudamina, in which the Skin is a little raised up, and itcheth; but these Eruptions are something larger than the Sudamina, and are scaley.

THEY are pretty like to Flea-bites, and Peticulæ; but are distinguishable from them by their Roughness and Itching.

It beginneth with a sharp and burning Fever; the third or fourth Day small red Spots break out, which by Degrees become something elevated, so as to make the Skin feel roughish.

THE Fever continueth to the fifth Day, and then it sinks off, and the Roughness gradually after it.

THE Physicians took it to be the common Measles, tho' it differed much ; for whereas many were carried off by the Measles, none died of this Aspredo, unless by almost a Miracle, or by some Mismanagement, especially by letting Blood.

ROSALIA.

THOSE which were rife at *Vienna* were red, and as it were fiery Spots, which, with scarce any Tumour, broke out the 4th or 5th Day like Erysipelases ; and in the Progress of the Disease, flushed all together over the whole Skin, and made it as red as Fire.

IN the Declination, this universal Redness being changed into the same Spots it began with, upon the 7th and 9th Day totally vanished, the Epidermis scaling off like Bran.

ROSALIA SQUAMMOSA.

*BARTHOLIN. Act. Med. Vol. 5. p. 153.* hath the following from *Borrichius*.

THEY belong to the Measley Tribe, and mostly seize Children ; first with a Drowziness, then with a continual Fever, and that a vehement one, generally with Watching, Inquietude, Delirium, and Heaviness of the Eyes.

THE third Day the Skin is spangled all over with broad, flat, and very red Spots, which, before next Morning, run all together into one, and make the whole Body (except the Face which is not so red) look as if it were rubbed with Kermes Berries.

THIS

THIS Redness holdeth on full three Days ; the fourth it begins to decline, and the Heat diminisheth ; and from that Time the Cuticle, breaking into small Scales, falls off, and new ones come in their Rooms several Times.

PERHAPS it is the same which *Sennertus* observed, saying, there is a Sort of Fever (but an unusual one) which he had sometimes met with, but was in doubt how to distinguish it by a proper Name.

FOR altho' it began like an Erysipelas, and seized the whole Body, yet he never saw it take grown Persons, which an Erysipelas doth indiscriminately : He inclines to put it into the Class of Measles ; and describes it just like that above of *Borrichius*.

#### RUBORES.

**D**IEMERBROECK *de Morbillis*, p. 303. gives us this Observation :

A *Dutch* Nobleman being taken with a Fever, having a strong but very unequal Pulse, Thirst, grievous Anxiety, Inquietude, slight Delirium, and some spasmodic Twitches in his Limbs.

AFTER a Clyster given, he was let Blood, and in the Evening took a Sudorific, upon which he sweat mightily : The Illness continuing much what the same, he took another Sudorific, and sweat powerfully.

THEN did the said Symptoms begin to abate, and the Patient complained of a troublesome Pricking and Itching all over his Body.

A little after appear'd here and there great red Spots, some as large as Crown Pieces, other half as broad as one's Hand ; some larger, some less ; which looked firey, and here and there were interspers'd with small Pimples, about the Bigness of Millet Seed.

IN a Day's Time these Spots ran all together, so as to make the Body every where of a very florid red Colour ; and then the Fever and other Symptoms grew milder.

THREE Days after that, the general Redness going off, the Spots came in Sight again, just as at first ; and three Days from thence they quite vanish'd, and so the Party grew well ; but with the Loss of his Cuticula, which peeled off all his Body over.

HE adds, that this is the very same Distemper which *Forestus* calleth *Purpura* and *Rubores*, and is nigh akin to the Measles, and to be order'd as they should be : But it is an hotter Disease, yet is easily discuss'd : As for the little Pimples, they are not suppurated, but are dissipated by Warmth.

#### ERYTHREMATATA, or RUBORES SENNERTII.

THEY begin with most violent burning Heat, intolerable Headach, want of Sleep, unquenchable Thirst ; dry, parch'd, and rough Skin ; Cough, Difficulty of Breathing, sometimes Tumour of the Tonsils.

ABOUT the fourth Day break out over the whole Body, from Head to Foot, both great and little Spots, which are red, and as firey as an Erysipelas ; but are perfectly flat.

IN the Increase of the Disease, some bleed at Nose ; through the whole Course of the Illness, there is Loss of Appetite ;

Appetite, perpetual Costiveness, Urine intensely red, thick, and crude ; a swift, and hard Pulse.

IN the State and Height of it the Body appears all over red, which obscureth the Spots that were distinct before.

ABOUT the Declination the Redness diminisheth again, unless in the Cheeks, for they often remain red ; which *Doringius* saith, is a sure Sign of an Inflammation of the Lungs.

As this Redness goeth off, broad red Spots come to Sight again, as at first ; which vanish quite away about the ninth Day, the Skin peeling off in little Scales.

*SENNERTUS* saith, this is a most grievous, dangerous, and often deadly Distemper ; for the Heat is most fervent, Thirst unquenchable ; and, for the most Part, there is an Inflammation of the Lungs, Throat, Bowels, and many times a Phrenzy.

COMMONLY in the Declination, at length the Matter is translated to the Joints and the extream Parts, causing a Redness, and Pain like the Gout.

THE Feet swell up to the Ancles, the Hypochondria grow tense, the Face is tumefy'd, Breath grows short and difficult, the Belly and Scrotum are swell'd.

THE Sick lie a long Time ill, and with much ado are at length recover'd, the Skin peeling off ; but very often they die of it.

*DORINGIUS* gave *Sennertus* an Account of a Boy, that, at the latter End of this Disease, had his Feet, Legs, Scrotum, Belly, and Face swelled, with a flushing Redness in now one, and then in the other Cheek ; with  
a Cough

a Cough which brought up nothing, and a great Difficulty and Shortness of Breathing.

SEVEN Days before he dy'd, he felt a great Weight in his Breast ; and then an Abscess breaking in his Lungs, he coughed up a vast Quantity of Pus and Blood.

WHEN his Body was open'd, it was found that the Disease had seiz'd, inflam'd, and putrefy'd his Lungs, and *interna Viscera*.

SENNERTUS tells us this is not a common Disease ; and perhaps we seldom, if ever, see it in *England*, as here describ'd.

It seems to me not much different from those which I call'd, as above, *Rubores*, and describ'd by *Diemerbroeck* ; but he saith it happens only to Children, and is more violent and dangerous.

BUT for ought I know, a too hot Regimen might produce many of the vehement Symptoms, as we know it will in a confluent Small-Pox ; or perhaps there went about a malignant, fierce, and anomalous Sort of it, when these Observations were taken by the Author.

IN the Years 1686 and 7, I saw many such-like Fevers.

IN one Gentleman's Family, his Son, of about six Years old, had a Scarlet Efflorescence all over his Body, without any great Sicknefs or Trouble ; and it went entirely off in about three Days time, the Cuticule peeling away.

THEN his Daughter, about eleven Years old, fell sick of a Fever ; first came out Purple Petechiæ ; after that an universal Scarlet Efflorescence, and that obliterated all the Spots : The Fever was very irregular, and held on  
T many

many Days beyond the Genius of a Scarlet Fever ; and when it went off, the Petechiæ return'd no more.

LASTLY, his other Daughter, about eight Years old, fell into a violent Fever, with Purple Spots, like the former ; but the Scarlet Flush never came out at all ; and she dying, (notwithstanding cool Regimen and Remedies) the Petechiæ continu'd and stood fair after she was dead.

### *The SPOTTED FEVER.*

THE Spots are flat, and perfectly smooth, without the least Roughness to be felt.

ARE mostly red and round, like Flea-bites ; sometimes they come out in broad Patches, and in irregular Figures.

AT first coming out, if they be press'd with the Finger they will disappear ; but afterwards, when they are fix'd, they will not do so.

THE brighter Redness they bear, the more benign are they ; for such contain spirituous living Particles of Blood, which possibly may recover itself again.

BUT the deep Purple, Leaden, Black, or Blue, are so many Putrefactions, and Degrees of Mortification, and cannot go off well.

BUT in a benign Fever, without Venom, sometimes they are not intensely red ; go not in again ; but by Degrees grow paler, yellowish, dusky, and then vanish.

LOTICHIUS, *L. 1. Obs. 2. p. 79.* speaks of a malignant Fever, which, about the seventh Day, put out black Spots of the Bigness of Pepper Corns in the Neck ; and the Party recover'd in a Fortnight's Time.

THEY

THEY come out without pricking or itching, chiefly on the Arms, Legs, Breast, and most usually on the Back and Loins ; and those Parts where the largest Vessels run, and which are usually kept from the Air, and are cover'd with the thinnest Skin ; but they scarce are ever seen on the Face or Hands.

PETECHIAL Fevers are generally malignant ; and therefore weakening the Vigour of the Vital Spirits, they run not into great Heats, nor vehement Symptoms : The Urine is commonly thin, and pale ; the Pulse quick, and weak ; the Symptoms abate not at their Appearance, but rather grow worse.

THE Spots seem to me to be produc'd thus : The febrile Venom having vanquish'd the Spirits, broken the Globuli into their Minima, join'd them Atom for Atom, and so form'd with them little virose Composites, which are so siz'd and figur'd as to be unfit for Circulation ; and upon that Account being separated from the rest of the Mass, and inbib'd by the Serum, are by it carry'd out thro' the miliary Glands, and deposited in the Skin.

IF they thrust out in the first Beginning of the Fever, they are of a very bad Signification ; for they are then so venomous a Matter, that Nature cannot endure it, and forceth it forth by Ebullition, before Digestion and Separation can be perform'd. They for the most Part observe no regular Time of Eruption, and commonly make not their Appearance before the seventh Day.

THEY mostly come out disorderly, unevenly, and symptomatically ; and if after they have been out, they happen to go in, they scarce ever come out any more, by any Means that can be used ; and then they are infallibly mortal.

## R O T H E L.

*P*ECHELIN, *L. 2. Obs. 19. p. 251.* describes a small Sort of Measles, call'd *Rothel*, which, in his Travels, he observ'd over-running the *Palatinate* and *Swabia*, sparing no Sex nor Age.

MOST of them had Restlessness, Lassitude, intense Heat, Loss of Appetite; some were confin'd two or three Days to their Bed; some, that were of fouler Bodies, longer; but some not at all.

UPON taking a Sudorific generally all went off easily; and few dy'd of it.

IT was so rife and contagious, that in that one City of *Stutgard* seven hundred lay ill of it at once.

THE Spots did not come out universally and equally over the whole Body, but in several Places by Cantons, especially on the Wrists; but when the Fever was moderated, they were not very red.

*The* PULICAR MEASLES.

*S*ANCHEZ, *p. 276.* speaks of a Sort of Childrens Distemper, in which the whole Body is filled, not with Tumours, but meer flat Specks and little round Spots, of the Bigness of Millet Seed, red like Flea-bites: The *Spaniards* call it *Tabardill*.

*Of the MEASLES.*

**T**HE Measles and Small-Pox differ not in Degree only, (as many Authors have said) but in Essence also; as is manifest from hence, that one of them never breeds the other.

MORBILLOSE Matter is more thin, subtile, and volatile; perhaps also more acrid than variolose is.

IT enters at first into the Lymph, where it irritates the Vital Spirits, in a peculiar Way proper to itself, and thence, soon after, runs in among the Globules also.

BUT its Nature seems to be such, as not to be intangled, inviscated, and so atomically consolidated with them, (which it is in the Small-Pox) but that it may be easily set loose from them, and sent off, by means of a pretty smart Fever; which, by way of Despumation, drives it out thro' the Cutis into the Cuticle, together with some of the finest and loosest of the Globules it had hurt, and seiz'd upon, and combin'd with.

AND these Combinations having neither Substance nor Place proper for Suppuration, are diffused and evaporated, and commonly in the Space of four Days spent and gone.

FOR the morbillose Inflammations are only in the Cuticula, which having no palpable Crassitude, is therefore incapable of receiving an Abscess.

*Foregoing SIGNS.*

**B**ESIDES Coldness, Shivering, Oscitation, Pandiculation, Sickness at Stomach, Vomiting, Anguish, Head and Back-ach, which usually forerun all maculose and pustulary Fevers; there are quick and weak Pulse, great Heat and Thirst, short and painful Respiration, Oppression of the Breasts, and Tension of the Hypochondria's, pale and thin Urine, Watchfulness, Drowsiness, Snatchings, Convulsions, Weakness, Heaviness, Redness, Swelling, and Pricking of the Eyes, Lids, and Brows, involuntary Tears.

MUCH Sneezing, sore Throat, Hoarseness, violent, ferine, and perpetual Cough.

THE Fever is known to be morbillose (or else variolose) by its very quick Progress, and by the Suddenness and Vehemence of the Symptoms; for commonly they come at the Beginning, and continue daily increasing, without Stop or Remission, till the Fever come to its Height.

BUT in a kind Measles, neither the Fever nor its Symptoms are so acute, and the Party hath little to complain of.

*To distinguish the MEASLES from SURFEIT  
SPOTS.*

**T**HESE Spots are never of a bright Red, as the Measles are; but Purple, Brown, or Blackish.

SURFEIT Spots break not out till eight or ten Days after the Illness is begun, and occupy mostly the Region of the Breast.

*From*

*From SCORBUTIC SPOTS.*

**T**HEY thrust out without any Symptoms of the Small-Pox or Measles preceding, without a Fever, never hastily, like the Crisis of an acute Distemper; but slowly, and a long time after one another.

ARE mostly on the Thighs, Legs, and Arms; not so often on the Breast or Back; very rarely on the Face.

ARE commonly pretty broad, and of an irregular Figure.

ARE not usually very red, but yellowish, dusky, brown, bluish, blackish: Are only flat Spots, and not Pimples.

*From the FAINT PURPLES.*

**T**HIS is a Name we have in the Country, but not in Books; and I suppose it may mean the same which Authors do, where they speak of the Scurvy coming out in Purple Spots all over the Body; for so they do, except the Face, which I have never yet observ'd them in.

THEY are very round, scarce so big as Flea-bites; they are not at all of the Small-Pox Colour, but of a deep Purple at first coming out, and may be easily distinguish'd thereby.

THEY come mostly in the Spring Time, or in the Summer hot Weather, without any Degree of a Fever.

THESE are not rising Pimples, but meer flat Spots, that cannot be felt with the Finger; and grow not at all in Bigness after coming out.

THEY

THEY are attended with great Faintness, whence the Name.

THEY continue sometimes a long while, new Spots constantly coming out, as the old ones wear off.

THE Manner of them is, that when a Spot is going away, it degenerates by little and little from its fair Purple, into a dusky Colour, and so to ash Colour, and by Degrees is obliterated.

I HAVE known them hold on a very long Time : A certain Woman, after a very hard Time of Lying-in, had the Purples struck out very thick upon her ; and when they had continued three Years, she advised with me, and was entirely freed from them by the Use of Antiscorbutics. But in her next Lying-in they returned upon her as before, and she was cured again by the same Means.

*From* PETECHIÆ.

THESE Fever Spots seldom come out till the Distemper hath set in for seven or eight Days.

THEY are at first coming out a good deal broader than either the Measles or Small-Pox use to be so soon ; for they appear at first in their full Bigness, and grow not a whit larger afterwards.

THEY are not of a bright Red, but Purple, or darker.

THEY are only a flat Spot, and make not the Skin rugged in the least ; whereas the Measles themselves have a Sort of Asperity, or a sharp little rough Head in the Middle upon the Face, and so may be known from the Petechiæ, which are absolutely flat and smooth.

PETECHIÆ

PETECHIÆ are exactly round, like Flea-bites, and have no such irregular Interstices as the Measles have.

THESE Spots are scarce ever seen upon the Face or Hands.

*From* FLEA-BITES.

THESE are Spots perfectly round and flat, without the least Protuberance, or Roughness, and are much larger than either the Measles or Small-Pox are at first coming out.

IF they be fresh, they shew Marks of the Bite, which is a little red Centre, visibly distinct from the rest of the Spot ; and that Centre will not disappear, tho' it be so pressed with the Finger as to force away the Blood from it, and make it look whitish about it.

IF they are not newly made, they are not of so fair a Damask Red as the Measles and Small-Pox are, but look more dead and dusky.

THEY never grow at all, nor keep coming out from Day to Day, but are all chancing.

IT is said they may be obliterated, if Bean Meal, wet into a Paste with Vinegar, be laid to them.

THEY come without any Indisposition, Signs, or Symptoms, that are usual before the Small-Pox or Measles.

*From an ERYSIPELAS.*

**T**HIS hath not such Symptoms before coming out, as the Measles and Small-Pox usually have.

IT cometh not out upon the whole Body, but some particular Part only, as the Breast, Back, Limbs; but most commonly the Head, Face, and Neck; sometimes it creeps from one Part to another.

IT breaketh forth altogether at once, and is a Tumour very sore and painful, like a Burn.

IT is without Pulsation; when it lieth deep under the Skin, it is a smooth shining Swelling, of a full red Colour; if it proceed to a further Degree, it appeareth Purple: I have seen where the Spirits were so extinguish'd in it, that it blister'd, turn'd black, and mortify'd.

WHEN it is only cuticular, it looks of a yellowish Red, and feels Roughish, by Means of a Multitude of exceeding small thick-set pimply Eruptions upon it.

IF it be pressed with the Finger, the Redness will go off, and leave the Place whitish; but that Redness will immediately return again.

MANY times it swelleth the Eyes up, and closeth them so as to take away Sight: 'Tis not much unlike the Tumour caused by the Stinging of Bees, only it is full of small Pustles.

S U D A M I N A.

**T**H E S E are only Asperitics, and itching Pimples, as small as Millet-Seed, which, without any Fever, break out upon the Skin of the Neck, Scapula, Breast, Arms, Thighs; and most of all near the Pudenda and Anus.

T H E Y happen especially to such as are Scorbutic, and of an hot Temperament; and to such as have in hot Weather sweated much.

*From HERPES MILIARIS.*

**T**H E S E Eruptions are not flat small Spots, all the Body over, but Clusters of pretty large, hot, angry, and very sore Wheals upon some one particular Part only.

*From the SCARLET FEVER.*

**T**H I S Fever puts out a continued Scarlet Efflorescence all over, causing the Body to look as tho' it were washed with deep red Wine, without Distinction of Spots, or void Interstitia.

*From the SMALL-POX.*

**P**A I N in the Back before Eruption, is not so violent in the Measles as in the Small-Pox.

P A I N in the Breast, and Straitness of Breath, is greater in the Measles than in the Small-Pox.

A Cough comes always before the Measles ; but very often not so before the Small-Pox.

THE Throat is more apt to be Sore, and Hoarseness happens more usually before the Measles than the Small-Pox.

THE Eyes are apt to be affected, looking dull and swelled, more before the Measles than the Small-Pox.

INVOLUNTARY Tears, Dropping at Nose, and Sneezing, forebode rather the Measles than the Small-Pox.

MEASLES generally break out very fast, and almost all together, when they once begin ; but the Small-Pox usually take four Days for Eruption.

MEASLES are a bright Red, and commonly redder than the Small-Pox are at their first Appearance.

MEASLES put out larger Spots on the Breasts, and smaller ones in the Face : This Dr. *Sydenham* looketh upon as a certain Diagnostic.

THE Measles in the Face feel a little roughish ; but in all the rest of the Body they are precisely flat and smooth.

THE Measles never elevate at all ; but the Small-Pox soon shew their Heads, if not in the Face, yet in the other Parts.

THE Measles at coming out branch about so as to leave void irregular multangular Interstitia, which is not seen in the Small-Pox.

UPON coming out of the Small-Pox, (if it be not a very bad Sort) the Symptoms abate ; but they do not so upon a morbillose Eruption, except only Vomiting, for that always goes off at that Time.

It may be believed that there is as much Difference between the benign and malign Sort of Measles, as there is between a distinct and a confluent Small-Pox.

*In a* BENIGN MEASLES,

THE Fever and Symptoms (except in the mildest Sort of all, which gives little Disturbance) are pretty vehement and sharp.

THE Work of Preparation and Concoction is in due Time universally and perfectly perform'd.

THE Spots appear the third, or at furthest the fourth Day.

THEY break out very quick and fast, without Stop, till all are come out.

THEY look of a very bright red Colour.

THEY gradually grow pale, and the fourth Day after Eruption disappear.

THE Fever, and all the Symptoms, go quite off with them.

A MALIGNANT MEASLES.

THE Malignity may be caused by,

1. THE Influence of the present reigning Epidemic Season.

2. THE particular Nature of the Sick.

3. IMPROPER.

## 3. IMPROPER Management or Medicines.

THE following Particulars, or some of them, may be expected.

THE forerunning Signs of the Distemper, and also the Fever and Symptoms, are comparatively moderate ; as it usually happens in Fevers of an ill Kind, that set upon the Spirits, and are like to overpower them.

THE Distemper runneth not thro' its Stages in their due Times, according to Nature's Allotment.

ERUPTION beginneth not till very late, as about the sixth or seventh Day.

THE Spots come out sluggishly ; first upon one Part, and anon upon another ; and so for divers Days, till all that will, are come out ; for it is likely, that in a mortal Sort many come not out at all.

THEY look not of a brisk, lively red Colour at first, and afterwards stand not to their Colour ; but are some Days paler or more dusky than other Days.

THE red Efflorescence holds on longer than four Days.

THE morbillose Fever continueth beyond its Time of four Days, and produceth divers Inflammations and Colliquations, ferine Catarrh, Soreness of Throat, Thrush, Cough, Quinsy, Peripneumony, Diarrhæa, &c.

To go about to alter the Description Dr. Sydenham hath drawn up of this Distemper, would be the same thing as attempting to alter one of *Phidias's* Statues.

I therefore judge it a wiser and better Course to translate him, than thrust in a worse Account of my own.

*The MEASLES, as Dr. Sydenham observ'd them  
in the Year 1670.*

ABOUT the Beginning of *January* 1670, (for they use to enter early in the Year) the Measles came in, and daily increas'd till the Vernal Equinox; then having attain'd their Height, they decreas'd by the same Degrees, and in *June* following went quite off.

THIS being the most perfectly regular Sort that ever I saw, I will describe exactly as I observ'd them.

THEY began and ended at the Times aforesaid; seiz'd chiefly on Children; but spar'd none in any House they enter'd into.

THE first Day, they open the Tragedy with shivering, and an Inequality of Cold and Heat successively chasing each other.

THE second Day, there is a perfect Fever, with great Illness, Thirst, Loss of Appetite, Whiteness (but not Dryness) of the Tongue, a little Cough, Heaviness of the Head and Eyes, with a perpetual Drowsiness; for the most Part an Humour distils from the Eyes and Nose.

AND this Effusion of Tears into the Eyes, is a most certain Sign of the Measles coming.

TO which we may add this other, no less certain, that tho' this Distemper most commonly sheweth itself in the Face in small roughish Eruptions, yet in the Breast it appeareth in red broad Spots, that are quite flat, and rise not above the Superficies of the Skin.

THE

THE Sick sneezeth as tho' he had caught cold; his Eye-lids (just before Eruption) swell; he vomits often; or hath a Diarrhæa with green Stools (which happens mostly) to such as are upon Dentition: Children are more froward than they use to be.

THE Symptoms usually increase till the fourth Day; and then (yet sometimes they stay till the fifth) small red Spots, like Flea-bites, begin to come out upon the Forehead and rest of the Face; which being grown in Number and Magnitude, flow together, and branch out upon the Face in pretty large, and variously figur'd Spots.

THESE Spots consist of very little red Papulæ, thick set together, and somewhat rais'd above the Plain of the Skin, whose Protuberance may be felt, but not so easily seen.

NEXT to the Face, which they possess themselves of before any other Part, they invade, by Degrees, the Belly, Thighs, and Legs; but they affect the Trunk and Limbs with Redness only, and no sensible Roughness.

THE Symptoms abate not upon the breaking out of the Measles, as they do in the Small-Pox, (yet I never observ'd vomiting after Eruption) but the Fever and Cough increase; and as to the Difficulty of Breathing, Weakness of the Eyes and Defluxions, Drowsiness, Loss of Appetite, &c. they remain as before.

THE sixth Day, or thereabouts, the Papulæ dying, and the Cuticula breaking, a roughish Scurfiness comes upon the Forehead and Face; tho', at the same time, the Spots on the rest of the Body continue very broad, and exceeding red.

ABOUT the eighth Day the Spots of the Face vanish, and on the rest of the Body they are scarce to be discern'd.

THE ninth Day they are all quite gone; the Face and Limbs, and sometimes the whole Body, appearing as tho' powder'd with Meal, by means of Particles of the tatter'd Cuticula sticking up roughish; which, upon the Disease's going quite off, severs into small Fragments, and afterwards scurfeth away like little Scales.

THUS the Measles vanish about the eighth Day; at which Time the common People (being let into a Mistake by counting upon the Time the Small-Pox useth to continue) are wont to say, they are gone in again; although, in Truth, they have finish'd the whole Course which Nature design'd. And they imagine, the Symptoms that arise upon their going off, are caused by the striking in of the Measles sooner than they ought.

FOR we are to observe, that at this Time the Fever, and Difficulty of Breathing are increased; and the Cough grown so cruelly troublesome, as to hinder Sleep Day and Night.

SUCH Children, especially, as have been kept too hot, and have taken hot Medicines, to drive, or keep out the Measles, are, upon the going off of the Distemper, most liable to these Mischiefs; whence they are thrown into a Peripneumony, which destroys more than even the Small-Pox, or any other Symptom belonging to the Disease: And yet if the Measles be but skilfully treated, they are of themselves not dangerous.

SOMETIMES a Diarrhæa goes along with the Measles, sometimes followeth, and continueth many Weeks after the Disease, and all its other Symptoms are gone, not  
X  
without

without imminent Danger, by reason of continual waſting of Spirits and Strength.

SOMETIMES after a very hot Regimen, the Spots look firſt livid, and after black: But this happens to grown Perſons only. And the Caſe is then deſperate, unleſs there can be preſent Relief obtained by Bleeding, or a more temperate Regimen.

*Another more irregular Sort of MEASLES he obſerv'd in the Year 1674 and 5. And ſaith,*

IN January 1674, there began a Species of Meaſles different from the foreſaid, and raged as epidemically as that, but was not ſo regular, and obſerv'd not ſo conſtant a Type.

FOR they brake out ſometimes ſooner, ſometimes later; whereas the others brake out upon the fourth Day precifely.

FURTHERMORE, they appear'd firſt on their Shoulders, and other Parts of the Trunk; whereas the aforeſaid were ſeen firſt in the Face, and then afterwards in the other Parts, by degrees.

NEITHER in this Sort, unleſs very rarely, did the Skin, upon the Departure of the Meaſles ſcale off like Bran; which was as certainly ſeen after the others, as uſeth to be after a Scarlet-Fever.

LASTLY, more dy'd of theſe when ill treated, than of the former Sort: For the Fever, and Shortneſs of Breath, which uſually comes when the Meaſles go off, were far more vehement, and more nearly repreſented a Peripneumony.

YET notwithstanding this Irregularity, as to the related Symptoms, they agreed with the other in all the most material Things.

AND they increased to the Vernal Equinox, then decreased again, and about the Summer Solstice quite vanished.

*He also telleth us of a MEASLEY FEVER at the same Time. Saying,*

IN the first two Months that this Species of Measles shew'd itself, a certain Measley Fever also went up and down scatteringly, in which some Ecthymata brake out upon the Trunk of the Body, and especially on the hinder Part of the Neck and Shoulders, which imitated the Measles, yet were distinguishable from it.

FOR the Spots kept to the said Parts, and seiz'd not the whole Body: The Fever also, though it was plainly of the same kind, was much crueller, and would continue fourteen Days, and sometimes longer.

It bore neither Glysters nor Bleeding; and the same Method of Cure fitted it, which agreed with the Measles.

### *Dr. SYDENHAM'S METHOD of CURE.*

THE Measles require much the same Method of Cure with the Small-Pox; hot Medicines and Regimen are extreamly pernicious.

LET the Sick be kept in Bed two or three Days in the Time of Eruption, that the Blood may gently breathe

out such inflam'd Morbose Particles as are separated and fitted to go off by the Spiracles of the Skin.

LET him have no more Cloaths, nor Fire, than he used to have in Time of Health.

LET him eat no Flesh: I allow Water-Gruel and Barley-Broth, &c. and sometimes Roasted Apples.

LET his Drink be Small-beer, or Milk boil'd with a triple Quantity of Water.

THE Cough, which never fails to accompany this Disease, is to be mitigated with a Pectoral Decoction, or proper Linctus.

BUT above all the rest, Diacodium must be given every Night from the Beginning, through the whole Course of the Sicknefs.

VERY rarely, if ever, will any one that useth this Method die, or even be molested with any thing, but such Symptoms only as are necessary and unavoidable in this Disease.

THOUGH the Cough be troublesome, yet it is not dangerous, if it continue not after the Distemper is gone off.

AND if it does persist a Week or two longer, it will decrease, and go off of its own accord, or may be easily cured by Pectorals, and open Air.

BUT if from too hot Cordials and Regimen, after the Measles are gone off, a violent Fever, Difficulty of Breathing, and other Signs of a Peripneumony arise and bring great Danger; I have (with great Success) order'd even the youngest Infants to be let Blood in the Arm; and where the Case requir'd it, I have not fear'd to repeat the same.

AND

AND truly many Children that have been at Death's Door with this Symptom, have been rescued by Bleeding: And I never yet could find out any other Way certainly to remedy it.

THIS is so fatal commonly after the Measles, that it may well be reckon'd the chief Minister of Death, destroying more than even the Small-Pox itself.

AND the Diarrhæa which follows the Measles is cured also by Bleeding; for whereas it ariseth from Vapours of inflamed Blood rushing into the Guts, whereby they are stimulated to Excretion, 'tis Bleeding alone that gives Relief, by making Revulsion of those sharp Humours, and by reducing the Blood to a due Temper.

WHAT is here said of the Cure of Symptoms that were upon the going off of the Measles, may sometimes also be of Use when they are at the Height, if they are occasion'd by too much heating of the Blood.

MUCILAGINOUS incrassating Pectorals are very useful in this Case.

### *Of* FEVERS *with* PUSTLES *or* ELEVATED SPOTS.

#### MILIARY FEVER.

IT begins commonly with Pain in the Limbs, Constriction and Oppression of the Breast, short Breathing, Sighing, Hurry in the Head: tho' there be no Head-ach, nor sensible Fever, yet there is almost an Impossibility of Sleeping; but when-ever Sleep happens, it is short, and broken, and exceeding troublesome.

SIGNS of its Approach are; if the Party grow hot, tho' with some Sweat, perceiveth in the Back, and Surface:  
face.

face of the Body, flying Horrors, and Pains like pricking with Pins.

RED Wheals of the Bigness of Millet-Seed break out, and when they once appear, all the 'forefaid Symptoms entirely cease. They come out mostly on the Breast, Neck, between the Fingers, and then all the Body over; and there growing in Bigness, in a few Days vanish, the Cuticula under the Pustles remaining roughish: After it hath run its Course, commonly the Legs and Feet swell.

SOMETIMES it hath been observ'd to come in among the Small-Pox, and the Case then is to be judged dangerous.

IF it be ill manag'd, it will cause Sickness at Stomach, great Anxiety, inward Heat, intense Fever, and perhaps prove mortal.

DR. *Hamilton* saith, whether their Eruption is on a certain stated Day, he could not find out by all the Observation he could make; but he thinks it is about the eleventh Day in a regular Sort, and that they finish their Period about the eighteenth, and in some the twentieth.

THIS Fever happeneth chiefly to Child-bed Women; and my Thought is, that it differs from the Purple Fever much about as the Small-Pox doth from the Measles: But I know it not to be infectious.

THE following Account was sent me by a Friend in a Letter.

A certain Gentlewoman had a Miliary Fever brake out upon her in Child-bed, soon after Delivery; it affected her Breast, Neck, and Arms, and gave her much Pain; some of the Eruptions were like little Boils, and as  
painful:

painful: She was recover'd by gentle Diaphoretics, and diluting Liquors.

*JUNGHEN Med. Pres. Sect. p. 797.* speaks of a certain Fever which commonly occurs, and seizeth grown Persons as well as Children.

It beginneth with Cold and Heat, like an Ague, and Oppression at the Breast.

It putteth out red Wheals, not much unlike Nettle-stings, which burn and itch.

It is cured by gentle Sweating, and seldom holds beyond the fourth Day.

He thinks it not much different from the Red Miliary Fever.

### *The WHITE MILIARY FEVER.*

**T**HIS comes out in Pustles of the Bigness of Millet-Seeds, but they are filled with only clear Water: They come without Sickness, bring no Danger, and are (if I judge right) no other than a small Sort of Crytals, and have little or no Contagion.

PERHAPS this may be the same which several Authors have called by the divers Names of *Febris Pemphigodes*, *Ampullosa*, and *Bullosa*.

### B R E X I A S.

*SANCHEZ p. 275.* saith, almost all Children, sooner or later, have that Distemper which the Spaniards call *Brexias*, and the French the *Little Small-Pox*.

It

It sprinkles the Body with small, white, black, livid Tubercles ; yet some are as big as Beans, and others as Cicers : It affecteth the Eyes, Mouth, Aspera Arteria, and Oesophagus.

THEY go not off very soon, and often suppurate, ulcerate, and leave Pits and Marks in the Face, and often require the Assistance of a Physician.

HE mentions another Sort, in which the Symptoms are less, but they come out red, with great Heat of the whole Body, which continue but a small Time, and go easily off, only by keeping the Sick warm.

THERE is, saith he, a third Sort not perfectly describ'd nor named as yet by any one : He would have it called a Pulicar, or Flea-bitten-Pox, as *Amatus* doth.

DIE STEINBEGTEN, *so called by the Germans,*

ARE small Tubercles, without much Sanies in them, breaking out scatteringly every where, but never in great Numbers.

THESE are the least of all the Sorts of Small-Pox that have been observed by Authors, invading Children without a manifest Fever ; and therefore they seldom lie in Bed for it, and soon are well again.

I know not what *English* distinct Name we have for it, and perhaps we have it not commonly in our Country ; however if we have it, we never took much Notice of it.

## RITTELEN or CHICKEN-POX.

THEY are small red Pustulary Eruptions, about the Bigness of Mustard-Seed, more or less numerous, invading with Fever and Cough, and sometimes sore Throat ; now and then with Bleeding at Nose, Vomiting, and other usual Signs of the Small-Pox or Measles : but this Distemper is less dangerous than either of them ; they vanish away like the Measles, and have been in some Years noted to go off with a Diarrhæa.

SOMETIMES they come alone ; sometimes have been seen sprinkled in among the Measles ; all which shews them to be a particular Kind distinct from the Measles.

I have adventur'd to think this is that which among our Women goeth by the Name of Chicken-Pox, and might be so called from the Smallness of the Specks, which they might fancy looked as tho' a Child had been picked with the Bills of Chickens.

BUT it is said, that Poultry and Turkeys are subject to a Disease coming out with red Pimples, tho' not many, that soon dry up into Scabs, but are not apt to leave Scars or Marks.

THIS Chicken-Pox, and several others of the little spurious Sorts, are Distempers that have all of them a distinct material Cause, and therefore differ not only in Degree, but in Essence also from one another.

THIS material Cause is not much entangled, and detained in the Size of the Blood ; but being of a sharper Nature than that of the Crystals, acts, tho' not so fiercely on the Globules as to put them into a febrile Ebullition, yet so as to break them a little, and cause them to

shed off some of their loosest Particles, with which being join'd, they come out in red Pimples, without the Help of a considerable Fever, or the Concurrence of remarkable Symptoms.

### SWINE or HOG-POX.

*C*HESNEAU mentions a Sort of Pustles, not much differing from the true Small-Pox, but are larger, even as big as Lupines : Many People at their breaking out mistake them for the Variolæ, but they continue not so long, bring no Danger, and leave no Marks : And these he thinks cause many to believe they have had the Small-Pox more than once.

HE gives no Name, but I take these to be what are call'd the Swine-Pox ; and this Name is taken from the Disease of Hogs, describ'd by *Levinus Lemnius*, and term'd *Grando Porcorum*, which we vulgarly call Measley Hogs.

IT infecteth their whole Body, especially their inward Parts, in the very Substance of their Flesh and Fat, with little white Knobs, which hath been fancied to be like Grando, or Hail ; it continues a long time.

*ARISTOTLE Hist. Animal. L. 8. Ch. 24.* saith, their Legs, and Neck, and Shoulders are affected : that it may be discerned before they be killed, by Blisters on their Tongues ; and if the Bristles be pulled from their Backs, the Roots of them will be bloody, and their Legs fail them.

I confess these Pustles in Children are not much more like the Grando in Hogs, than the Constellation called the Celestial Bear is like the Terrestrial Beast : But Custom is a Tyrant for Names as well as Things, and will have it so.

*The*

*The* CRYSTALS.

**T**HES E come with the very same Head-ach, Back-ach, Vomiting Fever, and other Symptoms usual in a true Small-Pox : But sometimes they seize Children without any foregoing Illness at all.

THEY break out the third or fourth Day, in certain distinct bladdery Pustles, dispersedly all over the Body, commonly as big as Pease, plump and shining like Crystal, from whence the Name, which if pricked send forth clear Water, and no Pus.

WHEN they are come out there is no Fever, nor Danger : In four Days time they dry off, but leave behind them pretty broad red Marks, which remain sore and tender in the Flesh for a-while.

IN these the morbid Matter is not very venomous and irritating, nor is it mixed in with the Globuli, but remains wholly in the Lymph, and is loose there, and not held fast by the fizy Part of the Blood.

FOR these Reasons this Matter requires not much Concoction, gives no great Disturbance to the Vital Spirits, and is soon separated and thrown out with the Serum only into the Skin ; and so the Distemper goes off by the Way of watery Wheals, without almost any Fever, or Sickness, or Suppuration.

*The* END of the FIRST PART.



EXANTHEMATOLOGIA:  
OR, AN  
A T T E M P T  
To GIVE a  
Rational ACCOUNT  
OF THE  
*S M A L L P O X.*

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Together with an  
APPENDIX *concerning* INNOCULATION.

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P A R T II.

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By *THOMAS FULLER*, M. D.

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L O N D O N :  
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# EXANTHEMATOLOGIA.

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## PART II.

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### *Of the SMALL-POX.*



WHETHER *Hippocrates* or *Galen*, or any of the *Greeks* or *Latins* knew any thing of this Distemper, I care not to enquire, it being a Matter of more Curiosity than Consequence.

INSTEAD of that, I shall take Notice of these four Particulars.

1. THE Small-Pox is peculiar to Man.
2. EVERY Man is liable to it.
3. No Man (generally speaking) hath it more than once.
4. It always breeds in its own Kind.

I. THE

1. THE Small-Pox, and its spurious Sorts, are peculiar to Man, exclusive of all other Animals.

MR. *Mather*, indeed, in his Letter from *Boston* in *New England*, saith, that Dr. *Leigh*, in his *Natural History of Lancashire*, reporteth, That there were some Cats known to catch the Small-Pox, and pass regularly thro' the State of it : And at last he telleth us, we have had among us the very same Occurrence.

BUT if we had seen and examin'd the Matter, perhaps it would have been found a very different thing from our Small-Pox.

FOR in like manner there was, about the Year 1710, or 1711. upon the *South Downs* in *Sussex*, a certain Fever raging epidemically among the Sheep, which the Shepherds called the Small-Pox ; and truly in most things it nearly resembled it : It began with a burning Heat, and unquenchable Thirst ; it broke out in fiery Pustles all the Body over. These Pustles matured, and, if Death happen'd not first, dry'd up into Scabs about the 12th Day.

IT could not be cured, no nor in the least mitigated, by Phlebotomy, Drinks, or any Medicines or Methods they could invent or hear of.

IT was exceedingly contagious and mortal, for where it came it swept away almost whole Flocks : But yet it could in no-wise be accounted the same with our human Small-Pox, because it never infected Mankind.

2. EVERY Man is naturally liable to the Small-Pox, and Measles, and the several inferior Sorts of both, so as to have any or all of them once in his Life, provided he come into the Sphere of the morbose Effluvia, and actually receive them into his Body ; otherwise it is possible he may never have them at all.

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FOR this Reason we are assured, that the vast Regions of *America* never knew any thing of them, till the *Europeans* carry'd them thither.

AND most Country-men, who never have Occasion to go into variolous Air, where they might catch them, scarce ever breed them.

BUT this Particular is to be taken with some Exceptions; for some whole Families have been as 'twere incapable of these Diseases: *Diemberbroeck* tells us, his Family (and divers others he could name) generally escaped the Small-Pox: His Father and Uncle liv'd to about 90 Years apiece; his Grandfather and two Kinswomen to 80; himself had gone to Thousands, smelling the Stench, and handling the Sores, yet none of all these ever had it.

NAY, as contagious as the Plague itself is, *Pechlin. Lib. 2. Obs. 19.* reports, that his Father, in three Seasons, when the Pestilence raged so at *Leyden*, that it had laid waste almost the whole Town, attended the Sick constantly, and by the Divine Goodness, continu'd safe and well, when all the other Physicians that did so, dy'd.

SOME particular Men are not apt to take Infection. Perhaps they might have had them in the Womb before Birth, and so could never take them afterwards. Such Instances have been; and shall be mentioned in another Place: Perhaps the Ovula Variolosa may in such People be unprolific; as we see some Women are barren, and incapable of breeding.

I knew an eminent Physician, who visited Patients of this Disease as often as Occasion call'd him, for, perhaps, 40 Years running, and never caught it. My own Mother was with her Sister, and two Sons, Night and Day constantly through the whole Course of their Sicknes, which

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among us all held two Months, and yet escaped the Distemper. Many like Instances might be brought.

*HOCKSTETTERUS, Observ. Dec. 9. p. 99.* saith, when he was a little Boy he had a great mind to get the Small-Pox; and to that End lay in a Bed with his Sister when she had them.

AND though at that time he fell into a burning Fever, it sent forth no Pustles, nor was in any thing analogous to the Small-Pox.

AND afterwards, though in his Practice, he all his Life-long visited Patients without Distinction, even such as had the Petechial and Bleeding Sort, which is excessively contagious, yet he never caught them.

A Lady told me, from her own Knowledge, of a Gentlewoman now living in *London*, who never had the Small-Pox, yet gave her Infant Suck all the Time, and never took the Infection.

IT hath been observ'd, that some Persons are so made and constituted, that even the Pestilence will not touch them.

*DR. Hodges de Peste, p. 137.* speaks of an Infant, that sucked its Mother all the while she had a Pestilent Carbuncle upon her, and yet escaped the Plague.

*STALPARTIUS, Obs. 99. p. 397.* reporteth, that in the Year 1654, he was call'd to a Widow, whose Husband and four Children were then dead of the Plague; she her self had Plague Sores in both Breasts, under her Arm-Pits, on her Back, and Legs; she lay sick of it in Bed many Weeks; her Child sucked her for six Weeks; then she being extreme weak, and her Milk failing, the Infant was wean'd; and still kept in the infected House,  
and

and notwithstanding all this, it never took Infection, and lived many Years after with its Mother.

HE quotes *Camerarius*, who relates of a Child, that sucked successively two several Nurses, both which dy'd of the Plague, and never gave it to the Infant.

ALSO *Salmuth* tells us of an Infant, who lying in Bed with its Mother, when dead of the Pestilence, endeavour'd to suck her, and yet escaped.

WE are not at all times equally apt to take Infection, our Bodies being from some secret Cause, not alike dispos'd for the Admittance of contagious Aporrhæas; and so those that miss them at one time, may be so alter'd, as to catch them at another.

THUS a certain Physician, my Neighbour, never scrupled going to the most putrid Sort of Small-Pox; and would take their Breath, and syringe their Mouths, &c. He escaped free for many Years, and conceited he had a Protection; but at last the Distemper caught him, and handled him so severely, that he very hardly got off with Life.

I would have this Observation stand as a Caution to others, that they be not so presumptuous and fool-hardy, as to run into the Mouth of Danger, when they may well keep out of it.

3. IT is believ'd that no Man can have any of these Distempers, or any other Species of them more than once in his whole Life; and that if he have never so few Eruptions, they shall most assuredly defend him from them for ever after.

I know a certain Gentleman, now dwelling in *London*, who is a living Proof of this; for his Mother told me, he had but one single Pock, and that was in the Inside of his

Hand: And yet that single one hath given him such a Protection, that he hath for above thirty Years run all Hazards of Infection, and never could get it.

A young Gentleman in our Neighbourhood had but one Pock in his Forehead, and another upon his Hand; and is thereby so secured, that no Infection will touch him, as he findeth by Experience, for he hath often been to visit Friends sick of the Small-Pox, and always comes off safe.

AND a Boy of our Town having the Small-Pox by way of Inoculation, had very few Pocks, (I think not above six or eight) hath been several Times since where he might have caught it, but never could.

SOME, I confess, have told me they have had them twice; and we have Authors that say the same.

*STALPARTIUS*, *Cent. Post. Obs.* 42. speaks of an Infant at the *Hague* that had the Small-Pox, but was not very full of them; and three Weeks after had them again, and was six times as full as the first time, and recovered.

*HEIDE*, *Obs.* 51. relates, that a Girl, ten Years old, having had a very kind Sort, fell sick of them again, two Months after.

BUT *Borellus*, *Cent.* 3. *Obs.* 10. puts, methinks, too unreasonably hard upon our Faith; where he would have us believe, that a certain Woman had them seven times, and dy'd of them at last 118 Years old.

NOW, as to myself, notwithstanding the abovesaid Relations, I am of Opinion, that once taking of them, generally speaking, is so sufficient a Defence against future Attacks, that none need be afraid of catching them a second time.

AND

AND I think Nurſes and Tenders, that ſpend their whole Life upon this Diſtemper, and breathe nothing but variolous Air in cloſe Rooms, Nights and Days, for a long time together, are undeniable Proofs that Infection is not to be taken any more than once in our Lives ; for whoever heard or read of any of them that fell ſick a ſecond time of the Small-Pox, or Meaſles ?

IT is, I allow, a common thing for a chancing Puſtle or two to break out upon them, very much reſembling a Pock : But forasmuch as theſe Eruptions happen without Headach or Sickneſs, obſerve no Times of appearing, quickly ſink away again without coming to Suppuration, or breaking of the Skin, and are never many in Number ; they are to be accounted of only as Subventaneous Ova, and muſt not be called the Small-Pox.

AS to thoſe who conceit they have had the Small-Pox twice, it is probable they might have been impoſed upon by the ſpurious Kinds ; ſome of which bearing a near Reſemblance of the genuine Sort, and being accompany'd with analogical Symptoms, and alſo leaving Pits and Marks behind them, may eaſily have been taken for the true Small-Pox.

BUT ſince ſuch a Miſtake can happen very rarely, and only where neither Phyſicians, Nurſes nor Viſitants know any thing of the Diſeaſe ; I ſhall faintly grant, that poſſibly it may return a ſecond time, where the Eruption had been little the firſt. And in this Caſe, I would account for it by ſaying, ſome of the Ovula chanced to miſs of the Aura Genitalis at firſt, and were impregnated when it offer'd the ſecond time.

4. VARIOLOUS, and Morbillous Fevers, and all other ſuch as come by Contagion, and whoſe material Cauſes are real Venoms ; theſe breed always after their own kind ;

kind ; as Animals and Vegetables do, according to the first Institution in *Genesis*, Chap. i.

H O W B E I T such an anomalous Constitution of Air in Epidemic Seasons happening as may much alter the Variolous Seminary, and turn the Ovula off from their proper Nature ; they may, in such a Case, breed a Monster of a Disease, though the Variolous Aura that fecundated them, be at the same time a genuine Sort.

E V E N as when an Afs covers a Mare, the Mare having in her something not agreeable to, and wanting something requisite for, the forming of every Part of an Afs, brings forth a Mule, a Beast not like to either.

A L S O after the Small-Pox are produced and come out, the Constitution of the present reigning Air will give it a peculiar Form and Symptoms during that Season ; and cause it to be generally regular or irregular, distinct or confluent, benign or malign.

B E S I D E S, they may be accompany'd with other Distempers, that are of a quite different Family ; as I have seen something perfectly like the Measles sprinkled in among the variolous Pustles, which belonged not to them, but was a distinct Disease of itself, plainly of another Lineage.

T H U S Dr. *Ridley*, *Obs.* 11. p. 49. gives an Instance of Small-Pox and Measles, and broad red multiform Spots all together, upon a Child of four Years old.

M A N Y Varieties are to be met with in Books, of other Diseases mix'd in with the Small-Pox, but nobody ever yet saw a Miliary Fever, or Measles, or any of its Under-Species, beget a true Small-Pox, or any of its Sorts ; nor on the contrary : and nobody was ever defended from the Infection of any one Sort, by having had another Sort.

T H E S E

THESE four Particulars are Matters of so occult a Nature, and fine Speculation, that, perhaps, it is almost an impossible thing to give such an Account of their Causes and Reasons, as may tolerably satisfy a curious Enquirer. Yet,

*Felix qui potuit Rerum cognoscere Causas.*

And the Tree of this Sort of Knowledge being not forbidden, I have employ'd some Thoughts upon these Subjects to please my self, and now I offer them to the Reader; but in no ways impose upon him as Articles of Faith, nor will I be bound to stand to them myself, and will not take it amiss, if they are not believ'd.

I have fancy'd we may get some Light into these Things from the Generation of Animals; where the Ova in the Female is the passive Principle, and material Cause; and the Genitura of the Male is the active Principle, and efficient Cause: And therefore I shall lay these two down as Causes of Variolous and Morbillous Distempers; and speak of them distinctly and severally.

*Of the Passive PRINCIPLE, and Material CAUSE  
of the SMALL-POX.*

**I** WILL endeavour to express my Conceptions in the following Particulars:

1. NATURE, in the first compounding and forming of us, hath laid into the Substance and Constitution of each something equivalent to Ovula, of various distinct Kinds, productive of all the contagious, venomous Fevers, we can possibly have as long as we live.

2. BECAUSE these Ovula are of distinct Kinds; and every one of these Kinds is as essentially different from all  
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the rest, as Eggs of different Fowls are from one another; therefore every Sort of these Ovula can produce only its own proper Foetus, as it is said, 1 *Corinth.* xv. 38. *To every Seed its own Body*; and therefore the Pestilence can never breed the Small-Pox, nor the Small-Pox the Measles, nor they the Crystals or Chicken-Pox, any more than an Hen can a Duck, a Wolf a Sheep, or a Thistle Figs; and consequently, one Sort cannot be a Preservative against any other Sort.

3. ALL Men have in them those specific Sorts of Ovula which bring forth Small-Pox and Measles, and therefore we say all Men are liable to them, which may admit of some Exceptions, as before said.

4. NO Animal but Man hath in it any variolous or morbillous Ovula, and therefore no other living Creature can possibly have any of these Fevers, or any other of those that are peculiarly human.

5. THE Ovula always lie quiet and unprolific, till impregnated, and therefore these Distempers seldom come without Infection; which is as it were the Male, and the active Cause.

6. THE Ovula of each particular Fever, are all, and every individual one of them, usually impregnated at once, (unless, by a rare Chance, some few happen to be miss'd) even as one Spark runs and kindles others till all become a Flame.

7. AS Birds have in them, from their very first Formation, their Seminaries, containing the Seeds of all the Eggs they shall ever have; so also Man hath from his first, the Beginnings of all the Ovula he is to have at all.

8. AND when these have been impregnated, and deliver'd of their morbose Foetus, there is an End of them; they can bring forth no more for ever after.

UPON

UPON this Account no Man can possibly (unless by the Chance aforesaid) be infected with any of the respective Distempers any more than once.

IF any ask where these *Ovula* can lie so long conceal'd in the Body perfectly quiet?

I may as well ask him, where the Taint lieth, which the *Arabians* and their *Neoteric* Followers assert came from the Impurities of the maternal Blood, with which the Embryo was said to be nourished in the Womb?

BUT be that as it will, we see other Things that we know are true and most certain, and yet are as strange and unaccountable as this.

THO' the Poison from the Bite of a mad Dog be (if not timely taken, and skilfully cured) so powerful, as not to be resisted by Nature, or conquer'd by Art, and be more infallibly mortal than the Plague itself; yet, as *Salvus Diversus* reporteth, p. 326. the Antients record that it hath lain dormant 5, 7, yea 12 Years. *Brassavolus* saith, 17 *Guainarius* 18. *Schmidius* 25. *Des Cros* 30. and after all that Time becomes mortal.

ROSSIUS (*Hildan. Epist. p. 66.*) gives a very odd Relation of a certain Woman, whose canine Madness returned every seven Years, for almost 31 Years, and she was entirely well all the intermediate Times.

BAGLIVI affirmeth, that the Impression of the Venereal Disease stuck to the Blood for thirty Years together, and more, without any Trouble or Injury to the Patient's Health: But then there was a sharp Return of Symptoms, as much as if it had been upon the very first Onset.

ALSO he saith the Poison of a Tarantula renews itself infallibly every Year, especially about the same Time the Person received it.

THE Venom of the Plague is as 'twere a Quintessence, and perhaps the most volatile of all Poisons in the World, and yet 'tis believed 'twill lie dormant a long Time ; otherwise a Quarentine, or Lustration of 40 Days would never have been imposed, and severely enjoined upon Ships.

NAY, Dr. *Hodges de Pest.* p. 156. asserts, that the *Seminum Pestilientiale*, like a Coal cover'd with Embers, may be asleep, *per aliquot Annorum Lustra*, and at length burst out again.

WE admire how it can be, saith *Borellus Cent. 1. Obs. 75.* that the Seminaries of Diseases should lie hid in us ; but may cease to do so, if we consider, without Prejudice, this excellent Passage of *Severinus*.

DISEASES (saith he) have, as well as Plants and Animals, their proper Seeds in their Way and Manner. God hath (ever since the Fall of *Adam*) created for the Punishment of Man the Seeds of evil, as well as of good Things. Our Bodies are the Soil where they are sown ; they grow up and bring forth certain Distempers, every one according to its several Nature ; each Sort hath its peculiar and like Symptoms : Every Sort of Plant hath its Fibres and Figure.

BUT as to complicated Diseases, they are to be accounted by us no other than Monsters of Diseases.

*The active PRINCIPLE, and efficient CAUSE.*

**B**Y this I mean a certain virulent Substance, that may possibly be bred in the Body ; but for the most Part is taken into it *aliunde*, and is an *Afflatus Genitalis* which impregnateth the *Ovula*, and rendereth them prolific, that would otherwise remain barren, and never bring forth. To illustrate this, I say,

1. EVERY particular Sort of virulent Fever, hath its own proper and peculiar venomous Particles : And each of these several Venoms are as essentially different from one another, as the Fevers are that they cause.

2. THE venomous infecting Particles are of such Sizes, Figures, and Agencies, as render them fit to enter the *Ovula* ; and without this Fitness there can be no Coition for Impregnation.

3. HENCE it will follow, that the said Particles impregnate only that Species of *Ovula* which they have Affinity to, and a Cognation with ; as a Male hath with a Female of its own Kind, and no other.

FROM these I would assist and support the Reasons before offer'd, why the Small-Pox, Measles, Pestilence, &c. can infect no Animal but Man ; and why the Murrain of Beasts cannot infect Man.

I take this virulent Substance to consist of rigid, infrangible, and unalterable Atoms, so subtle, pointed, edged, and perhaps indented, crooked, barbed, &c. as to be, *toto genere*, and wholly destructive to the Spirits, Blood, and Solids of Man.

BUT as to their real particular Geometrical Figures, Measures, and Mechanic Manner of exerting their Powers ;

these always were, and for ever must be undiscoverable to us in this our Life of Cimmerian Darknefs, and State of Imperfection.

FOR confefs it or not, but fo it is, that Mathematicians can make no Demonftrations, where they have no certain Lines and Angles to work upon : And Philofophy hath hitherto made but a poor Progreff in the Difcovery of the *Terra Incognita* of Nature, and the component Elements of Bodies.

AND I, for my own Part, was ever of the Mind that it was a commendable Modesty in our Fore-Fathers, to confefs that the Make and Qualities of Things are occult, and undifcernable to us ; tho' to the utmoft of our Capacities, we employ Anatomy, Chymiftry, and the nicest Glaffes in Search of them.

THE Exility of Things is infinitely beyond human Apprehenfion and Thought, and is perfectly amazing.

#### A DIGRESSION, concerning the EXILITY of Things.

ONE Ounce of Leaf Gold (as I find noted down in my *Adverfaria*) laid upon a Silver Ingot, may be drawn out into Wire 150 Miles in Length ; and fhall cover all fo entirely, that no Silver fhall be feen thro' it, no not even by the Help of a good Microscope.

THAT which perfumeth a *Damafco* Sword Blade, tho' perhaps it cannot enter into the Pores, and interior Receptacles of the hard Steel, but only lieth fspread upon the polifh'd Surface, and that in fo thin a Coat, that it takes nothing off from its Brightnefs, and the nicest Eye, aided with the beft Glaffes, can difcern nothing of its Subftance : yet that Matter (whatever it be) fends off odoriferous Effluvia, without ceafing, for twenty, thirty, or

or I know not how many Years : How incomprehensibly minuted must these little sweet Bodies be !

As to Animal Aporrhæas ; where an Hare hath passed swiftly, it will, in that Moment of Time, and quick Touch, leave upon the Ground certain Corpuscles, which transpired out of its little Feet ; and those Corpuscles shall be continually flying off all along for many Miles, six or eight Hours together, as is manifest in Hunting.

AND to add to the Wonder ; these steaming Bodies, as little as they are, most certainly are specifically different from all other Vapours flying in the Air, else an Hound could not distinguish the Scent of an Hare from a Fox or Partridge ; or an hunted Hare from one fresh started, as a stanch Dog will do.

As to the Parts of the Body ; the Arteries and Veins, Nerves, &c. are spun out into such Finenesses, that it is utterly impossible to trace them to their Origin and Ends, by the most exquisite Microscopes that ever were, or can be made : And if the solid Parts are so minute, what can we imagine of the Liquids, and particularly of the Spirits ?

As to whole Animals ; their Exility is beyond all Astonishment : *Leewenhoeck* saith he thought no Kingdom in *Europe* contained so many Men, as he saw Animalcles in the Seed of an Oyfter.

ALSO he judged there were not so many Men in the whole Earth, as there were living Creatures in the Seed of one Cod-Fish.

AND he affirmeth he hath seen in one Drop of Water, Two Millions Seven Hundred and Thirty Thousand living Animalcles.

AND

AND Dr. *Hook* (see *Ray's Wisdom*, p. 387.) reporteth, he hath discover'd Animalcles, Millions of Millions of which might be contained in a single Drop of Water.

AND it is highly probable, that every individual one of these, which we may term living Points, have in them something analogous to Bones and Flesh, Heart, Lungs, Brain, Blood, and even Animal Spirits too : and how infinitely little these must be, surpasses perhaps the Capacity of an Angel to conceive.

INDEED if our Eyes were as minute as are those of the abovesaid Animalcles, whose Bulk of Body is less than one single Animal Spirit of ours : And such there actually are, for ought we know, since our Microscopes shew us all along living Atoms less and less, and never come to a *ne plus ultra* : I say if our Eyes were so minute, they might probably open to us a new World of Littles, and help us to a clearer View of the Works of the Almighty, which are now incomprehensible :

AND might set to Sight even the constituent Elements of at least some of the grossest Bodies, as plain as the dim Light we now grope about with, shews us the single Parts that go to the making of an Heap of Corn, consisting of Wheat, Barley, Oats, Beans, and Pease, all thrown together.

THEN possibly we might be able as clearly and distinctly to discern the flying Particles, their Shapes, Sizes, Propensions, Mixtures, mutual Tangencies, Collisions, Dispositions of Pores, together with their Activities and Motions, whereby the Magnet attracts Iron, and tends to the Poles ; as now we can see how a Watch goes, and how a Key opens a Lock.

BUT further, if we were to have another Set of new Senses put into us, and added to the five we already have,

have, then our Knowledge of Nature's Secrets and Finesses would be most marvellously improv'd, and in an innumerable Number of Particulars, which we can know nothing of now, enlarged and perfected.

FOR assuredly there exist in Bodies almost infinite Qualities and Powers, of which we could never have the least Suspicion, because we are not accommodated with Senses proper for the taking in of their Species, and bringing them to our common Senfory.

AND upon this Account, it being utterly impossible for us to have any Kind of Impression and Notice from them, out of which Ideas are fram'd, they must of Necessity be to us just the same, as tho' they were not in *Rerum Natura*.

THUS for Instance, if it were not for our Sense of Smelling, we could never have any Kind of Idea of Odours : If we had been made without that of Hearing, we could have had no Notion, nor the least Imagination of there being in the World such a thing as Sound. And so of Taste and Colours.

THESE Things have I the longer been upon, to the End that the Reader should not exact from me, nor expect from any one else neither, any Mathematical Demonstrative Description or Explication of Natural Bodies, either as to their Elements, Textures, Qualities, or Operations, especially of those which I have here called the active Principle, and efficient Cause of venomous Fevers.

## CAUSES of the DIFFERENCES of SMALL-POXES.

**T**HE Small-Pox (as before said) keeps precisely to its own Family, so as never to produce the Chicken-Pox, Measles, or any other Distemper whatsoever, but the true Small-Pox only.

FROM this Observation we may fairly lay it down for an undoubted Tenet, that all variolous Matter (which I call the active Principle, and efficient Cause, coming *aliunde*) is naturally the very self-same in all Subjects, as really as several Parcels of white Arsenic put into several Papers are the same.

YET notwithstanding this, the Small-Pox doth not always beget in its own exact Likeness; for a Distinct will breed a Confluent, and sometimes a Bleeding Sort; and on the contrary, a Malignant will produce now and then a Benign Sort.

AND these different Effects from the same Matter, are caused by, 1. The Air, 2. Management, 3. The Nature of the Sick.

### I. *The* AIR.

**T**HE Time of the Year, Qualities of Hot, Cold, Dry, Moist, and their innumerable Varieties of Degrees and Compositions, make one Small-Pox differ from another in several Seasons.

BUT in Epidemic Time, when venomous Atoms *sui generis* swimming in the Air meet, and mix in with variolous Particles, and together with them combine, and constitute

constitute Concretions different from both, the Small-Pox produced thereby will be as the Nature of those Concretions is, specifically different from all others, and respectively anomalous for that Season.

## II. MANAGEMENT.

**B**LEEDING, Vomiting, Purging, Cordials, either wrongly omitted or used, may very much turn the Manner of the Disease off from what it would have been if left to itself.

Too cold a Regimen, and unnecessary Evacuations, may diminish the Spirits, and depress them so much, as thereby to injure the Work of Concoction, Expulsion, and Maturation.

ON the other Side, keeping of the Sick too close and hot, and forcing and firing him with high Medicines, may so exalt the variolous Matter, as to render it a fierce and caustic Gas, productive of a venomous confluent Sort, which would have been otherwise a gentle, kindly, distinct Small-Pox. See more of this under the Head of *Regimen*.

## III. NATURE *of the* SICK.

**E**VERY individual Man differeth from all others, in some Respect or other, not only in the Ways and Methods of Sensation, Passion, Inventions, Memory, and Manner of Management of Affairs, but even in Features, Air, Voice, Gate, common Action, and even in Writing; and all these different Effects must necessarily have so many different Causes.

GREAT Differences arise in us from Youth and Age, Fatness and Leanness, Strength and Weakness, Hardiness and Tenderness, Courage and Timorousness ; from Temperament and Constitution, the various Courses of Life, and daily Accidents.

As to Solids, we wonderfully differ from one another ; for of the Fibres are made the Membranes, Tubulæ, Nerves, Blood Vessels, Flesh, Glands, Heart, Lungs, Brain, &c.

AND in differing Subjects, these Fibres may well be thought to differ, not only in being of a closer or thinner Contexture, but also in their being finer, coarser, weaker, stronger, moister, dryer, more or less extensile and contractile.

As to the Liquids, the Spirits abound more in some than in others, in different Men are more or less agile, dull, pure or feculent, firm or dissipable, apt to Explosions or other Ataxies.

As to the Blood ; it may have more or less Serum, Globules, Fibres, Size ; may be more pure or polluted ; may circulate clearly or obstructedly.

BUT because there is a natural Make and Resemblance of liquid and solid Parts in Persons related to one another, the Small-Pox is observed in some Houses of the same Blood to be generally mild and benign, and in others almost always malign and mortal.

It is impossible to exhaust this Head of Differences ; but from what is here deliver'd, we cannot wonder to see such different Small-Poxes taken from the same sick Person.

I have

I have seen a monstrous fat Fellow, who had filled all his Life with Idleness, Debauchery, and stuffing out his Carcase, and breeding Grease and ill Humours, that had a very benign distinct Sort.

ON the contrary, I have several Times observ'd, where healthy prosperous Children and Youths, with sweet Blood, and pure Humours (as far as could be known) had miserable, putrid, bleeding Small-Poxes, and we could not so much as guess at any Reason why it so happen'd.

IN this our sublunary imperfect State, we are a poor purblind Sort of Mortals, that can discern but a very little of the Particularities, Internals, and curious Niceties of Nature.

A modest Man that acknowledgeth human Imbecility, will not therefore sit e'er the lower in the Esteem of Men of right Thought : but a peremptory triumphing young Philosopher, that is brim-full of Omniscience, must drop down into a Form shamefully below that of *Socrates*, who at last found it out that he knew Nothing.

*How VARIOLOUS DISTEMPERS have been,  
or may be generated and propagated.*

**T**H O' the Matter of these be a particular Poison, that is proper and peculiar to each Species, and cometh for the most Part *aliunde*, yet, for ought I know, it may sometimes be generated in our Bodies ; and I am at a Loss to think how it should otherwise come at first into the World.

WE have heard of many an one, who, when he could not in the least suspect the taking of Infection, had it

bred in him (as it was thought) from a Surfeit, foul Living, a Fever, Fright, &c.

I knew a Person, and had a great Acquaintance with him, who, through the Ignorance of a Physician, took a whole Dram of Gamandra at once; good Part he believ'd he cast up, but the Remainder wrought outrageously, and threw him into a burning Fever, which terminated in the Small-Pox, though at that Time the Distemper was not (to his Knowledge) in all that Country, and he had been no where to take Infection.

THIS odd Observation I was willing to insert, because since we know not the utmost Power and Qualities of Things, it may possibly give us a Suspicion, that this exotic Drug being something of a caustic Nature, may be endued with some Sort of unknown Property of impregnating the original Deposita of this Disease.

As some believe, Calomel hath a contrary Faculty of preventing it; which may be more probable for that it hath been an Observation, that the Pestilence never was known in the Countries where the Quicksilver Mines are found.

THERE have been very numerous Instances of People that have got the Small-Pox (but not the Measles, or any other Sorts that ever I heard of) by mere Fancy and Fear.

BUT one of the most unaccountable was (if my Relator deceiv'd me not) of a young Man, who being scared with seeing one that lately had it, was taken ill upon the Spot, and hurry'd home presently, and had them come out upon him the very next Day. This Case I think beyond all Rule and Precedent; for there was no Time for Assimilation or Concoction of the Matter before Expulsion.

Now

NOW when a Person is taken with a thorough pannic Fright, and thinks of nothing but Infection, that extraordinary Perturbation and Terror may form the Spirits into such Species, and create such an Alteration of the Particles of the Body, as will directly and peculiarly act upon the latent Ovula as effectually as an actual Contagion might do.

A certain Lady of an Honourable Family, had a Gold Chain sent her to wear, which another had worn in the Small-Pox, to keep them (as they conceited it would) out of her Throat; and had laid by for a Month after she was well up again. This (one would think) harmless Thing, chanced to bring Terror, and caused her Fancy to work her up into a kindly Small-Pox; out of which she recover'd to give me this Account: She also gave me the two following Relations:

A Gentlewoman going out of Church, pretty nigh a Grave the Sexton was digging, had a little of the Earth thrown upon her Cloaths. She went home most terribly frighten'd, fancying some Corps that had dy'd of the Small-Pox had been bury'd there. The third Day after this, the Small-Pox broke out upon her; upon which she fell in Travel, brought forth a Child full of them; and both Mother and Child dy'd. So the Distemper bred upon both from nothing at all but a mere mistaken Conceit; and was form'd, and thrown out in the Space of three Days.

A Gentleman, as he lay sick of the Small-Pox, order'd his Servant to send a Key, which he had not lately touch'd; and lay in a Chamber far distant from him, to his Mother. She conceited it brought Infection, fell ill of the Small-Pox, and, being seventy Years old, dy'd.

THAT Longing-Women should, by the pure Workings of Imagination, form their Spirits into such Ideas,  
Figures,

Figures, and Species, as to imprint Marks upon their ~~Fœtus~~ in the Womb, and fix upon them not only flat Spots, and Moles, but even fleshy protuberant Substances, in the perfect Likeness of such Things as they longed for, as perhaps a Cherry, or other Fruit; which shall have the very Shape and Colour, and shall, as it were, ripen in Season, and grow Red, when the true ones on the Tree do so: This is as strange a Thing as breeding of the Small-Pox by the Force of Fear and Fancy; but it is so common, that we have long ago left wondring at it.

MR. *Wiseman* saith, it is a Thing not rare in Surgery, to find the Small-Pox produc'd by the Pain of an Ulcer; as also to have it break out upon the healing up of them. But this, I conceive, can scarce happen but in an epidemic Season, when the Air is very full of Infection.

THERE goes about a common Opinion, that those who are near akin, and so are naturally analogous, may sympathetically infect one another, though at never so great a Distance; and Books give many seeming Instances, and pretended Reasons for it, and I myself have known what was thought so.

BUT, as I apprehend, corporeal Agents act only by Means of Contact. If the Thing to be acted upon be at a Distance from the Agent, that Contact must be perform'd by Effluvia from one to the other, such Effluvia have a determinate Sphere of Activity; and whatsoever is out of that Sphere, cannot be acted on by them. Upon these Considerations, I am afraid those Authors have been mistaken in their Observations and Reasonings.

BUT be it so or not, I see no great Use of the Notion, either for Prevention or Cure; and so I put it off to the Vulgar, who are infinitely pleased with Mysteries and Miracles, which they have good Hope others understand as  
little

little as themselves: And so as to these Matters they are at a Par with them.

It was a mighty strange Thought of *Rhazis* (*de Mirabilibus*, &c. towards the End) concerning a Girl, who by using herself to the drinking of Camel's Milk, and taking Diamoschu after it, fell into the Small-Pox; of which she grew well in thirty Days, which was a long Time too.

*AVICENNA* also joins with him, saying, that Milk, especially that of Camels, and Mares, *facient cadere in variolas velociter*; these are the *Latin* Translator's Words; that is, dispose quickly for the Small-Pox.

WE have very many Instances in Authors, of Children infected in the Womb; *Bartholin. Epist. Cent. 2. Epist. 85.* tells us of a Woman sick of the Small-Pox, that brought forth a Child full of it, and both Mother and Child dy'd.

*HILDANUS, Cent. 4. Obs.* saith, a certain Woman, in the very Height of the Small-Pox, having gone with Child almost her full Time, was deliver'd of a Child, whose Face was full of it, and it liv'd to the eighth Day.

*DOLÆUS de Feb. c. 6. p. 777.* saw a great Person, who, while sick of the Small-Pox, brought an Infant into the World with them upon it.

*FERNELIUS de Abdit. rer. caus. c. 12. p. 503.* saith, it hath oftentimes been seen, that Women have brought forth Children full of the Small-Pox; some of which Women had themselves nothing appearing outwardly, and others of them felt no Illness till many Days after.

*CASTRO quæ de quibus, p. 209.* saw one who dy'd in his Mother's Womb of the Small-Pox.

BARTHOL.

*BARTHO L. Hist. Anatom. Cent. 4. Hist. 5.* saith, that in the Year 1656, a very bad Small-Pox was rife amongst all Sorts of People; and that Infants were infected in the Womb with it; together with Malignant Fevers and Petechiæ.

INSTANCES have been of Children, that having had the Small-Pox in the Womb, have there run through the whole Course of it, and been born well recover'd of it, with plain Marks of it upon them.

It's a pretty observable Case, of a Woman with Child, who having had the Small-Pox, had a Protection for herself; but, by visiting one in that Distemper, gave it her Child in the Womb. Three Relations of this Case I have received from good Hands; one of which was of a Baronet's Daughter in *Kent*.

To the same Purpose, *Ettmul. Part 2. p. 404.* quotes *Morison de Morbis Mulier. p. 60.* for it; that a Woman being pregnant, and in good Health, sat constantly by her Son sick of the Small-Pox, and was brought to Bed of a Child with it upon him.

WHAT is here said of the Small-Pox, hath been likewise observ'd of the Measles.

*SCHENCH, p. 842.* tells of a Child, born with the Measles upon it.

*DODONÆUS, p. 101.* saith, several (particularly in the Year 1608.) measley Women brought forth measley Children.

*HILDAN. Cent. 4. Obs. 56.* reports, that a Woman, in the ninth Month of her Impregnation, fell sick of the Measles, and the fourth Day of her Distemper, brought forth

forth a Boy full all over; and both Mother and Son recover'd.

*SCHENCH.* *p.* 842. hath a Relation of a Child, who three Days after Birth, had the Measles, and soon after the Small-Pox.

BUT it doth not constantly happen, that a Mother having it upon her, infects her Child within her.

*BARTHOLIN. Act. Med. Vol. 5. C. 75. p. 176.* reports of an illustrious Countess, that being full of the Small-Pox every where from the Crown of her Head to the Sole of her Foot, upon the eleventh Day was deliver'd of a Child fat and well-form'd, that had no Mark of the Distemper seen upon it: But the Infant being immature, and unfit for Respiration and external Air, expired in half an Hour after Birth.

SOME may suppose it would have had the Small-Pox, if it had not dy'd before the Time of Eruption: But we had in our Neighbourhood a Woman that brought forth a Child while she had the Small-Pox actually upon her; and that Child liv'd, and never had the Distemper.

IF any conceive the Child had had it in the Womb, and was grown well of it again; I say, perhaps, it might as well not be so; for, within six Miles of this Place where I live, it was told me, that a Child was born of a varicellous Mother, who escaped the Distemper for that Time; and yet, many Years after, when she was grown up, caught it at *London*, which she would not have done, if she had not missed it before. This Person is now living.

## To Prevent the SMALL-POX.

**D**IGBEIUS *Expressionem Sanguinis in Vasis Umbilicalibus Fœtus jam in Lucem editi, ante ligationem, & abscissionem accurate institutam, pro universali habet Præservatione.*

BUT I question its Efficacy; not only because he was one that delighted much in strange Things, and was a credulous Man, but because also the Thing itself seems to smell strong of the *Arabian Hypothesis*; and some that have try'd it have found it fail.

OTHERS say, if the Infant be vomited, and gently purged, so as to carry off its Meconium, presently after it is born, it will never have the Small-Pox: But this looks something like the other, and I am not over confident that it will succeed.

THE Germans (as before said) wonderfully commend *Mercurius Dulcis*, and assert, it will quite preserve one from the Small-Pox, or, at least, infallibly cause it to prove mild and safe. We have Accounts of it in *Miscel. cur. Anni 1672. Ettmul. de Variol.* and *Jungken, Med. pres. sec. p. 800*, mentions the same.

THE Means I can think of for Prevention, are the following:

AVOID all irregular and unusual Ways of Living, as to the Six Non-Naturals.

LET him beware of Drunkenness, Gluttony; all Meats of hard Digestion, and ill Nourishment; Things that are Hot, Salt, Biting, Garlick, Onions, &c.

LET

LET him never go Fasting; let him eat as soon as out of Bed; Bread and Butter, and Leaves of Rue will be a good Breakfast; let him never go to Bed empty.

LET him drink such Liquors as are agreeable to the Stomach and Bowels, and may keep the Blood and Spirits fresh, and vigorous, but not fill them with Wind, or over-heat, nor any way disturb them.

LET him use such convenient and moderate Exercise of Riding, Walking, &c. as he was wont to find agreeable in his common Life.

LET Sleep, and Watching, Times of going to Bed, and Rising, be just the same he was used to in Time of Health.

LET him void Excrements according to his natural and common Custom; if he want Help that way, he may, at going to Bed, take *Pil. Ruffi* ʒj. or *Elect. Lenit.* ʒss. or ʒvj. or the like, just enough to procure Laxity.

BUT as to direct Purging, it will, in a Time when Infection is fear'd, rather invite it in, than keep it out.

VOMITING is recommended by some as an excellent Preservation; but if it prove not such, yet possibly it may be a good Preparative, provided it be used before the Party perceiveth any Symptoms of the Disease upon him.

PHLEBOTOMY also is advisable to keep off Feverishness for young Men, and all such others as abound much with rich inflammable Blood, or have heated themselves by Surfeiting, over-much Exercise, &c. but in others, it may weaken the Spirits, and render them the less able to keep out Infection.

LET him, with all possible Watchfulness and Care keep off from great Passions, and more especially from those that dissipate and depress the Spirits; such as Sorrow, and Fear: If Chearfulness and Courage keep Guard, the Enemy will hardly enter.

BUT, as to most of these Matters, the particular Constitution, and common Custom of Living, must give Directions and Rules.

SUDDEN Changes (tho' for the better in Appearance) are sometimes prejudicial, because they put settled Nature out of her Course, and alter the Body, that was in good Circumstances before.

LET him (if he be of a sanguine Temperament, and seem to have hot thin Blood) make use of such Things as cool, thicken, and dulcify; namely, moderate Acids, Small-beer, or *Ol. Vitriol. Elix. Vitrioli, Elix. Propr. acid. Succ. Limon. Decoct. Lusitan. Tinct. Rosar.*

LET such an one avoid all Things that heat, sharpen, attenuate, dissolve, or break the Blood, particularly those of the acrid, biting, burning Class, Onions, Garlick, Radish, Mustard, Scurvy-grass, Galingale, Ginger, Pepper, Grains of Paradise, &c.

As for Antidotes, that are properly such, and have Power specifically and directly to oppose, correct or conquer variolous Venom, I know of none.

BUT as for generous Cordials, that comfort and fortify the Stomach, elevate and invigorate the Spirits, kindly exagitate and placidly accelerate the Blood, whereby the venomous Particles are either quite kept out; or, if a little enter'd, are presently driven out again by way of Diaphoresis; we have great Plenty of them, *viz.*

*Rad.*

*Rad. Serpent. Virgin. Contray. Angel. Hisp. Zedoar. Petosit. Bacc. Junip. Crocus, Myrrh. Camph. Coccinella.*

*Aq. Ceras. nig. Rutæ Laët. Alixit. Epidem. Pæon. C. Theriacal. Vin. Canar. Tinct. Croci, Elix. Propr. acid. Spir. Sal. Armon. Ol. Junip. Dec. Sacr. Pulv. è chel. Canc. Comp. Lap. de Goâ, Lap. Contray.*

℞ *Rad. Contray. contus. ʒiij. Sal Absint. gr. xxiv. Coq. in Aq. f. ʒxij ad ʒviiij. sub finem add. Coccinel. gr. xij. col. adde Aq. Rutæ ʒij. Aq. Epidem. Theriacal. aa. ʒj. Sacch. cand. alb. ʒiij. m.*

℞ *Theriac. Androm. Mithrid. Diascord. aa. ʒij. Rad. Zedoar. Angel. Hisp. aa. ʒß. Croci ʒß. Ol. Junip. gt. iiij. Syr. Caryoph. q. s. f. Elect.*

℞ *Myrrh. ʒj. Camph. ʒß. Croci ʒj. Vitel. Ov. q. s. f. Pil.*

LET him wear upon his Thorax and Stomach this Plaister.

℞ *Theriac. Androm. ʒvj. Terebinth. Venet. ʒiß. Bals. Peruv. ʒß. Caryoph. gr. v. Croci ʒß. m.*

FOR a Woman, ℞ *Theriac. Androm. ʒß. Galb. Col. ʒij. m.*

A Nodule may be hung from the Neck upon the Breast, made of *Theriac. Androm. Camph. & Ol. Junip.*

TURUNDE of the same taken upon Cotton may be put up his Nose.

OR they may be made of Theriaca and Rue beaten up together.

LET

LET the Vapour of Vinegar sprinkled on an hot Brick, be taken into his Nose.

LET him wash his Mouth with Vinegar, in which Rue hath been infused, or to which are added *Venice Treacle*, *Mithridate*; or *Tincture of Myrrh*, *Elixir Propriet. Sp. Vini Camphorat.*

LET him carry about with him Tobacco, Cardamoms, Pellitory of *Spain*, Roots of Angelica, Zedoary, Juniper-Berries, to chew: If he be used to Tobacco, let him smok it, especially Mornings and Evenings.

LET his wearing Cloaths be fumed every Morning with Frankincense, Pitch, Rozin, &c. burnt.

CUSTOM is so authoritative, that I am almost afraid to say I do not like Snuff, especially if it excites Sneezing in an infected Air; for it shakes the Lungs violently, and causes such a strong Inspiration, as powerfully attracts the morbose Matter into the inmost Penetralia of the Bronchia's, and mixeth them immediately with the Minima of the Blood.

As to Issues, tho' they may be supposed to evacuate ill Humours, and thereby may something serve towards the keeping of the Body in good Order, and by that Means may prevent the taking in of Infection: yet I am got into a particular Conceit of my own, that they being raw, open to the Air, and without the Defence of a Cutis, may let in variolous Matter, like Inoculation.

AND therefore in an epidemic Season, or in any infected Place, if it may be done without Danger of bringing other great Inconveniencies, in my Judgment, they ought to be stopped up.

THE same may be said of Blisters, or any Excoriations.

BUT sometimes it so happens, that the Distemper will not be put off; and then if the Patient die, the Physician that tampered with his Preservatives will have a hard Task of it to justify himself, not only to the ill-condition'd Populace, but also to the Relations and Friends.

THEREFORE it is good to use our best Endeavours honestly to profess nothing of Infallibility, but leave Room for Accidents and unforeseen Events.

*To keep INFECTION out of an House, and to purify it.*

**K**EEP it perfectly clean.

LAY in the Windows, upon the Beds, and the Floors, Rue, Baum, Angelica, Burnet, Lavender, &c.

SPRINKLE the Floors with Vinegar.

WHITE wash the Walls.

QUENCH Lime in it.

SMOAK it full of Tobacco, and shut it up close in the Rooms.

UPON a red-hot Brick burn Pitch, Frankincense, Rozin, but above all Sulphur; and if Women in it be inclinable to Hysteric Affections, Galbanum, Assa Foetida, &c.

MAKE good flaming Fires, and then set open the Casements for a little while, to let the heated Air out.

Now

Now and then make a sudden Blast with Nitre, or Gun-Powder thrown upon Coals; or sometimes shoot off a Pistol in the Rooms.

### Concerning PURIFICATION of the AIR.

A TOWN ought to be cleansed from all Filth and Naftiness; for tho' such Things do not properly breed particular malignant Fevers, yet they give an Offence to the Spirits, disorder and weaken them, so as to render them less able to resist and keep out Infection.

I am apt to fear, that in an Epidemic Season, when the Body of the Air is filled with morbose Atoms, it cannot be cleared from them by Storms, Thunder, Wind, Rain, nor by any Art of Man, any more than it can from the Particles that make and convey Sound: But in Tract of Time they alter, wear out, are spent, and fly away of themselves; and so that Constitution of Fevers, which had continued, it may be, for some Years, goes off, and gives Place to some other new one.

It is recorded indeed of *Hippocrates*, that he drave away a Pestilence by great Fires: But one Experiment is not enough for a certain Proof of an abstruse Matter: For ought we know that Plague might at that Time have been much spent; or it might happen to abate from some other quite opposite Constitution of Air then coming in, or from some other secret Cause.

DR. *Hodges de Peste*, p. 25. justifieth a Doubt concerning this Matter, saying, in the Time of the Plague at *London*, great Fires were made (he and the other Physicians being utterly against it) in the Streets.

THE Event was lamentable : *Inauditæ Cladis* (faith he) *Nox advenit, sane ultra quatuor Millia ante Diluculum mactata sunt* ; above Four Thousand Men lay dead before Day-break.

I conceive those Fires, by breaking the Pestilent Particles, multiplied and volatilised them, and by calcining them, made them more caustic and deleterious ; and thereby render'd the Plague more infectious and more fatal.

SHOOTING off of great Guns hath been proposed and practis'd. I know not what Success it hath had ; but it is well known that great Explosions have such a strange Power, that in a Sea-Fight, when the Winds were high, the Guns have shot it quite away, and caused a perfect still Calm.

It seems likely, that making of great Smoaks and Smothers, by burning Pitch and Brimstone in the Streets, especially when the Winds are still, and dissipate them not ; when the Air is cold and moist, and the Barometer is in a sinking way, they may mix in with the Air, and remain in it, and not be dispersed for a Time ; and so may be of some Use for this Purpose.

### General PROGNOSTICS.

1. **I**N an Epidemic Season they are more or less dangerous, according to the Nature and Genius of the present reigning Constitution.

2. COMMONLY they that are Epidemic and very contagious, are of an ill Sort ; for if they were not of a virulent Nature, they could not be so prevalent and spreading.

3. IN some Families it is observ'd, that the Small-Pox have always been very mortal, or at least excessively bad and dangerous : In others the quite contrary.

4. TO those whose Parents had, or they themselves have the *Lues Venerea*, they are very bad.

5. TO such as are tainted with any Degree of the King's Evil, they are dangerous.

6. SUCH as have Obstructions in the Hypochondria, or any of the Viscera, are very unfit for this Distemper.

7. UNHEALTHY Cacochymic Persons cannot have them without Danger.

8. SUCH whose Flesh, upon a Cut or Sore, is apt to rankle much, are like to have it worse than those whose Flesh useth to heal easily.

9. TO such as are of an hot Nature, and apt to Inflammatory Fevers, especially to a Catarrh, fore Throat, and Quinsy, they are very dangerous.

10. TO such as have lately inflamed their Blood by Debauchery or Surfeiting, they are often mortal.

11. TO such as are of a cold Nature, or are in some Degree of an Anasarca, they may be beneficial : I think I have known where the Small-Pox hath mended such a Constitution, and made the Party more healthy than ever before.

12. THOSE that are over-fat and gross, are thought very unfit to go thro' this Disease : yet I knew one of the very fattest Men living, who had a distinct Sort, and passed thro' every Stage of it easily. In this Case I conceive, that tho' he was corpulent, yet it was not ill Humours and Impurities, but merely Fat that stuffed him out ;

out ; and I am of Opinion, that those Persons whom Nature hath formed with a great Plenty of Glandulæ, and Cellulæ Adiposæ, will be inclineable to be Gross, and may notwithstanding live Sound and Healthy.

13. THOSE that have weak Lungs are very unfit for the Small-Pox ; yet I was with a Clergyman, who was of a tender imbecile Nature, and had been for many Years grievously and frequently troubled with Asthmatic Fits, and had so flaming and fluxing a Sort, that he underwent a great deal, and escaped very hardly ; yet had not one Touch of his Asthma during all his Sickness : But when he recover'd out of the Small-Pox, his Asthma returned again with more Violence than ever.

14. PERSONS that are truly consumptive, especially if they are so far gone in it as to have an Hectic Fever, or cough up Blood, scarce ever recover.

15. IN coarse-grained Bodies so it is, that when the Fever inflameth and paineth the external Parts, the Skin purfeth up and straightens the Pores, and suffers not the morbose Steams to transpire, and by that Means heighteneth the second Fever, and causeth an hazardous Small-Pox.

16. THOSE whose Skin being contexted of very fine soft Fibres, and therefore having but little Strength of Tone, and Power of Resistance, like Cheverel Leather, can stretch and turn their Pores into any Figure, according to the Matter that is brought to them : Such Persons are qualify'd to let the noxious Matter transpire freely ; and therefore (provided their Spirits hold up sufficiently for the Work) are mostly dealt with very favourably.

YET such seem more apt to take Infection than those that are more robust, because their Pores are most open, and their Spirits more weak.

AND by reason their loose Glands and weak Fibres may suffer great Distensions and Alterations, sometimes we see the Features of such Persons quite changed into other Faces : And generally the Small-Pox leaveth fine Skins coarser than it found them.

17. WOMEN have generally softer Skins, opener Pores, and weaker Spirits than Men, and therefore are more apt to catch the Small-Pox ; but (if it be not near their monthly Times) use to have them easier, and with less second Fever.

18. TO Women with Child, especially in the last Months, and most of all to such as have been apt to miscarry, they are very dangerous.

19. IF a Woman suffer Abortion during the Time of her having the Small-Pox, she very seldom escapeth : Yet I was with one who on the eleventh Day miscarried, and then fell into a very bad Fever, like that called Malignant ; she recover'd, tho' very hardly.

AND another I attended, who was brought to Bed the very same Day the Pustles broke out ; the Lochia proceeded duly every Day : She had a kind distinct Sort, and easily recover'd.

20. IF the Small-Pox happen when either by reason of a Fit of Sickness, or a Surfeit, the Spirits are low, and the Blood over-heated, corrupted, or impoverish'd, they are like to be dangerous.

21. IT is usual for Children that have passed the Red Gum and Breeding of Teeth, to be dealt with favourably.

22. YOUNG People, before Puberty, for the most Part have a more kindly Sort than Adults.

23. YOUNG

23. YOUNG lusty strong Men, that are full of hot Blood, and brisk Spirits, are liable to a bad confluent Sort.

24. OLD Men have them not so well as those of a middle Age, after the Boisterousness and Vigour of Youth is something over.

25. THOSE that are in great Fears and Sadness, for the most Part go through them very badly.

26. IN my Opinion, Infection taken in at the Pores of the Skin, gives a much better Sort than that taken by Inspiration immediately into the Lungs. Inoculation seems to prove this.

27. INFECTION taken from the Bleeding Small-Pox, I have observ'd, hath always produced an extreme malignant, or rather venomous Sort, which killed wherever it came.

### *SIGNS of the APPROACH of the SMALL-POX.*

SOME have them break out without any foregoing Signs, or Warning at all, as they walk about, having no Head nor Back-ach, nor any other Uneasiness.

THIS happens mostly to Children that have sweet, soft, temperate Blood, and quiet Spirits : And to such others as are of a very sound Constitution, and have not been over-heated : For in these but a little Matter will be assimilated.

AUTHORS reckon up a great many Signs whereby to judge of an Illness, that it will turn to the Small-Pox ; but those Signs never happen all together to any Person, neither are they to be rely'd upon as infallible : And so they

they can scarce be (where there was no known Infection) a certain Foresight of the Small-Pox before Eruption.

YET, in a Season when the Distemper is epidemic, any Fever, or violent Emotion of the Spirits or Blood may give Suspicion of it; and so much the more, if the Party have been where he might take Infection, though it were a Month before; and especially, if he was fearful, and apprehensive of it.

MOST commonly the Party is taken with Shivering and Cold, more or less, like that of an Ague, which is quickly follow'd by excessive Heat, and Thirst; which continuing without Remission, groweth higher and higher, till the Spots appear.

AT the same Time, there are more or fewer of the following Symptoms:

1. AN unusual violent Head-ach, with throbbing Pulsation in the Fore-head and Temples.
2. A tearing, grinding, pulsing, shooting Pain in the Back.
3. FLYING Rheumatick Pains of the Limbs, and all the Body over: Also a Sense of Pricking and Itching every where in the Skin.
4. AN universal Unwieldiness, with Yawning and Stretching.
5. ITCHING of the Nose, and Sneezing.
6. TREMBLING all over, especially about the Heart and Hands.
7. PAINFUL Oppression of the Breast, if pressed with the Hand.

8. SICK-

8. SICKNESS at Stomach, with a general Anxiety, Nausea, Vomiting, sometimes a Diarrhæa, especially in Children.

9. SINKING of Spirits, and Sadness, from no known Cause.

10. RESTLESS Want of Sleep, Vertigo, Delirium, unquiet Dreams, Frights, Startings.

11. TWITCHING of the Tendons, Convulsive and Hysterical Fits.

12. SLEEPINESS, and such a Stupor, that the Sick cannot bear the Light, nor hold up his Head.

13. REDNESS, Heaviness, Swelling, Dimness of the Eyes, involuntary Tears.

14. DRY Cough, which was not before, Hoarseness, Sore Throat, Shortness of Breath.

15. BLEEDING at Nose.

16. THE Menfes breaking down out of their Season.

17. GREAT Propension to Sweat.

18. THE Pulse swift, strong or weak, according to the Condition of the Spirits, and State of the Fever.

19. URINE, like that of People in Health, at the same time, when the Fever runneth high.

20. BUT sometimes when there is great Ebullition, and Confusion in the Blood, the Urine is high coloured, and full of Contents.

21. IF the Symptoms (especially if they come at the Beginning) continue to increase every Day, they pathologically signify the Small-Pox; for Dr. *Morton* asserteth, that

that it happens so in no kind of Fever, but the Variolous, Morbillous, and Scarlet.

22. IF the Symptoms hold on beyond the ordinary Length of a Paroxysm of an Intermitting Fever, especially if they go on all along increasing till they are very violent, they give great Suspicion of the Small-Pox, and the more so, if the Urine alter not much upon it; but if they continue past the fourth Day, and nothing break out, they are from some other Cause.

THE Fever, though it be at first irregular, is really and truly of the continual Sort; and therefore if it intermit, so as to come to a fair and plain Apyrexia, it is not variolous.

### *Of a N U R S E.*

**T**HOUGH it is impossible to meet with a Nurse every way so qualify'd for the Business, as to have no Faults or Failings, yet the more she cometh up to the following Particulars, the more she is to be liked. It is therefore desirable that she be,

1. OF a middle Age, fit and able to go through with the necessary Fatigue of her Undertaking.

2. HEALTHY, especially free from Vapours, and Cough.

3. A good Watcher, that can hold sitting up the whole Course of the Sickness.

4. QUICK of Hearing, and always ready at the first Call.

5. QUIET and still, so as to talk low, and but little, and tread softly.

6. OF

6. OF good Sight, to observe the Pocks, their Colour, Manner, and Growth, and all Alterations that may happen.

7. H A N D Y to do every Thing the best way, without Blundering and Noise.

8. N I M B L E and Quick a going, coming, and doing every Thing.

9. C L E A N L Y, to make all she dresseth acceptable.

10. W E L L - T e m p e r e d, to humour, and please the Sick as much as she can.

11. C H E A R F U L and Pleasant; to make the best of every Thing, without being at any time Cross, Melancholy, or Timorous.

12. C O N S T A N T L Y careful, and diligent by Night and by Day.

13. S O B E R and Temperate; not given to Gluttony, Drinking, or Smoaking.

14. O B S E R V A N T to follow the Physician's Orders duly; and not be so conceited of her own Skill, as to give her own Medicines privately.

15. T o have no Children, or others to come much after her.

#### D I E T.

**D** I E T must be only such as may be allow'd in Fevers; such as is thin, and easily digestible; that disturbeth not the Stomach, nor breedeth Wind; that affordeth such a kindly Chyle as may mix in with the Blood, without exciting too great a Fermentation in it.

E c

W H E N

WHEN it is feared that Infection is taken, there must be an Abstinence from all Flesh, Fish, Eggs, from all Things that give strong Nourishment, that are fatty, spicey, salt.

IN the Time of Sickness, Food may be Water-gruel, Barley-gruel, Panada, plain light Bisket.

TAKE Pearl-Barley one Ounce, Crumbs of White-Bread two Ounces; boil these in a sufficient Quantity of Spring-water, till it come to a little Thickness; then strain it off, and sweeten it with the finest Sugar.

FIGS are good; Dr. S. thinks not amiss of Roasted Apples and Milk, provided it be taken warm, and moderately now and then, for a Change; but this must be avoided, if there be any Tendency to a Looseness.

MARE'S Milk drank warm as it cometh from the Mare, during the Time of Augmentation, and Maturation, hath been exceedingly recommended to me, as a Thing that nourisheth without giving any Disturbance to the Blood, tempereth the variolous Acrimony, correcteth its Venosity, defendeth the Intestines, secureth the Lungs, preventeth or cureth Sharpness of Urine and Micturition, keepeth forward Expulsion, filleth up the Pustles with benign Serum and Steams, maintaineth the Swellings, promoteth Maturation, extinguisheth Thirst, and, in a Word, is Meat, Drink, and Medicine all in one.

BUT towards the last, when the Saliva growing thick, and the Ptyalism beginneth to stop, it seems not proper; at that Time, Figs, Bread and Butter, Toast and Butter, Toast and Beer, if the Sick be able to chew and swallow such Things, may be good to clear his Throat from foul Slime and Stoppage.

WHEN

WHEN the Disease is going off, Dr. S. alloweth a little better and more hearty Diet; such as Sops in Beer sweeten'd, Caudle, and the like.

### DRINK.

GENERALLY speaking, I am unwilling to allow Wine, except only to such as have made it almost their daily Drink; and then but sparingly neither, unless there be some evident Reason for it; for I have known it drank every Day, through the whole Course of the Small-Pox, where the Spirits flagg'd, and the Fever sunk below itself, with good Success.

I seldom grant even Sack-Whey, because of its Vinosity, unless made with Barley-Water and Milk, of each a Pint; and Sack half a Pint; or the Whey may be made with White-wine instead of Canary; which being not so sweet, is less fulsome, and satisfieth Thirst better.

DRINKS may be,

CLEAR Poffet made of nothing but Milk and Beer; or Three-leav'd Sorrel may be boil'd in it.

OR Poffet made with Milk, a Quart; Small-Beer, a Pint; and White-Wine, half a Pint.

OR, take fine Barley-Water, half a Pint; Milk, a Pint and half; just make them boil up, and presently take them off, and keep the Liquor in a Bottle.

OR, instead of Barley-Water, a Decoction of Shavings of Hart's-Horn may be used; for, it being only a gelatinous Substance, I can in no wise believe it can impart to the Water it is boil'd in any heating or forcing Quality.

## Of the SMALL-POX.

PECTORAL Decoctions are of great Use, especially all the Time of Augmentation, and Ripening.

℞ *Hord. Perlat. Rad. Alth. Viciar. Contus. aa. ʒss. Glycyrrh. Sem. Lini. aa. ʒij. coq. in Aq. font. lbij. ad ij. sub finem addendo Conserv. Ros. Rub. ʒiij. f. Col.*

℞ *Hord. Perlat. ʒ℔. Passul. Sol. Exacinat. Fic. concis. aa. ʒj℔. Glycyrrh. ʒij. Coq. in Aq. f. lbij. ad ij. Col.*

WHERE Sweetness is offensive, and Acids are desired to quench Thirst, and to repress too much Heat:

℞ *Glycyrrh. Conserv. Ros. Rub. aa. ʒj. coq. in Aq. f. lbij℔. ad lbij. Col. adde Suc. Limon. ab. ʒj. ad ʒij. m.*

BUT above all other Liquors whatsoever, small, or middling Beer, which is fresh, and clear, and neither too new, nor too stale, nor bitter, is most grateful and proper for our *English* Bodies; and sometimes proves the best Julep in the World to quench Thirst, dilute and cool the boiling Blood, and promote Salivation.

BUT if there be Nauseousness, Sickness at Stomach, Vomiting, Windiness, Gripping, Diarrhæa, &c. raw Beer, as also all Sorts of brisk, lively fermented Liquors, are to be avoided, by reason of their smart elastic Gases, which pricketh and offendeth weak Stomachs and Bowels.

NOTWITHSTANDING, if Beer, and such brisk Liquors be boiled, they evaporate all their Elasticity and Quickness, and become, tho' less poignant and pleasant to thirsty Palates, yet innocent and inoffensive.

IF the Sick refuseth boil'd Beer, a Piece of Bread toasted till black, and then fir'd, and put into it all in a Flame, and cover'd, and set by for a while, will medicate it as well almost as boiling.

OR,

OR, new Tobacco-Pipes made red hot, and quenched in it, may serve for the same Purpose.

R E G I M E N.

**T**HE Regimen ought to be so adjusted, that the necessary Ebullition be duly carried on, and be neither too remiss nor too high, but in such a middle moderate Degree, as the several Stages of the Distemper require : And the right ordering of this is a Matter of the greatest Moment.

*The MISCHIEFS of a too Cool REGIMEN.*

1. **T**HE Ebullition may be so check'd, as not to be sufficient to carry on the Work of Concoction : This may happen from the very Beginning of the first Fever.

2. **T**HE Pores of the Skin may be so shut up, as to render Eruption very difficult and irregular, when the Matter is prepared and ready for it. This Danger is greatest near the Time of Eruption, but may continue all the four Days of that Stage.

3. **T**HE morbid Matter which was prepar'd, and began to be thrust outwards, may be driven inwards, and be resorpt into the Blood again : Whence the Fever and ill Symptoms which should now remit, continue, and grow violent. This may happen after Eruption is begun.

4. **W**HERE there is a great Quantity of variolous Matter assimilated, if it be hinder'd from coming out, it may seize upon the Viscera, the Stomach, Guts, Mesentery,  
Liver,

Liver, Lungs, &c. This may happen also in the Stage of Eruption, and be continu'd afterwards thro' all the other Stages, where it may hinder Colour, Augmentation, Maturation, and Salivation.

BUT these Mischiefs do not so frequently occur, as those that are caused by an over-hot Regimen; which Nurses are apt to fall into, to bring out (as they imagine) the Pocks.

SUCH Persons are most obnoxious to the ill Effects of a too cold Regimen, as are of a cold Constitution; are of tender lax Bodies; are apt at other Times to catch Cold; are used to wear much Cloaths, or Bed-Cloaths; ancient People, and those that are faint-hearted.

ALSO such as have lately had a severe weakning Fit of Sickness; have been much bled or purged; and those that are low spirited and timorous; and such as are breeding the distinct Sort.

THE Times of most Danger are, the Nights, and Winter cold Season.

### *The MISCHIEFS of a too Hot REGIMEN.*

IF by spirituous aromatic Cordials and Sudorifics, too much Cloaths, constant confining to Bed too soon, great Fire in the Chamber, &c. The Patient be over-heated, or laid in a Sweat, to bring out the Pocks; many grievous Evils, and hazardous Symptoms may be excited thereby, which would not otherwise have happen'd.

FOR they may cause,

I. THAT a great Quantity of variolous Matter be assimilated.

2. THAT

2. THAT such an Hurry of the Spirits, and Confusion of the Blood may be caused, as will hinder the morbose Particles from being extricated from the Mass; and by that Means Expulsion (which this first Work should make Way for) must be either imperfectly perform'd, or totally stopped.

THUS hath it been often observ'd, that the Pustles could not be driven out by the highest Cordials, and powerfullst Sudorifics, till Bleeding; and a cooler Management had brought the Spirits to Quiet, and the Blood to Temper again:

FOR Concoction, Extrication, and Subaction, when they go on as they should do, are mild and moderate, Nature requiring for these Operations a not much greater Degree of Heat, than that of Incubation upon Eggs.

3. THAT the Party, who commonly before the Act of Eruption is in utmost Anguish, may be overborne with Heat, and suffocated, or may be render'd so sick and faint, that he hath not Spirits and Vigour enough left to force out the morbific Matter.

THIS, I am assured, hath been a frequent Case. I remember particularly, an only and very hopeful Son, of a good Family, thus fired out of the World, by the unhappy Tenderneſs, and blind Care of his Widow Mother.

4. THAT the Sick falling into profuse Sweats, so much of the Lymph may run out at first by the Pores, that there will not be a sufficient Penus left to supply Matter for the Growth and Maturation of the Pustles, and the Tumescence of the Interstices, Face and Hands.

5. THAT such Particles and Humours may be forc'd out with the Sweats, as are neither adapted for Expulsion,  
nor

nor agreeable to the Nature of a variolous Pus ; whence come intolerable Itching, Purple Spots, discoloured watery Pocks, Blisters, and the like ominous Symptoms.

6. THAT so a large Quantity of the lymphatic Serum may be thrown out by Sweat, that the ferine Particles which were, till then, diluted by that Serum, and kept afunder, may be conglomerated and clustered together, and suffered to rage furiously in the Mass, without Controul, and so the Symptoms and Accidents may grow most cruel, fierce, and mortal.

7. THAT the Sick may be so harassed, tired, and broken, and lose so many Spirits, that Nature must necessarily fail, and give out before the Distemper has run through all its Stages.

8. THAT the Fever and Fury may be so increased, as not only to corrupt the Blood, and destroy its Crasis, but also the very Tone of the Fibres, and Solid Parts of the Body, and particularly of the Cutis, and so hinder Expulsion ; which cannot be perform'd well without a Sort of tonical Constriction of the Cutis, keeping the Pores from falling together, and closing up by too great Laxity and Weakness.

9. THAT the Fever being raised up higher than it ought, may force an Eruption to begin, before an universal Preparation be compleated, whence it must needs come to pass, that some of the venomous Particles being driven out, when others are not rightly fitted for it, and therefore remain yet behind, the Fever and ill Symptoms caused by those that so remain in the Blood, continue many Days after the Appearance of the first Pustles.

10. THAT (which usually happens) such Corpuscles may be extricated, as are no ways fit for Eruption ; and these mixing with, entangling and confounding such others

others as are fit and just upon the Point of breaking out, turn them into *Moleculæ* of other Sizes and Shapes, which are disproportionate to the Miliary Glands and Pores, and by that Means frustrate Expulsion.

11. THAT the variolous Matter may be bred in great Quantity, and be pushed out in such Plenty, and so thick, as to run together in Clusters and Blisters, and bring forth a terrible Flux.

12. THAT the hot infected and inflam'd Blood being rapidly hurry'd on, may break in upon the Brain, and put the Animal Spirits into great Disorders, and produce Watching, Coma, Frenzy, Convulsions, &c.

OR falling cruelly into other Parts, may cause Peripneumony, *Hæmoptysis*, *Diarrhæa*, *Dysentery*, Strangury, bloody Urine, &c. all which are mortal, or seldom otherwise.

13. THAT the violent Exagitation and Ebullition may make the morbid Matter excessively acrid and corrosive; and also may so boil it into the internal Substance of the Blood, as to render the second Fever highly venomous and unmanageable.

14. THAT it may break the Globules in general into their minutest Atoms, tear asunder the sanguineous *Fibrillæ*, destroy the whole Contexture of the Blood, and produce Scarlet Effusions, Purple, Black, or Blue Spots, bloody Urine, &c.

ALL these, and perhaps many more Mischiefs may easily be the Effects of a too hot Regimen: And the greatest Part of those that dye in the Small-Pox are ruin'd this Way. And there is no Physician indifferently versed in this Disease, but knows of many murder'd by this same well-meant, but ill-employ'd Care.

THIS over hot Regimen is pernicious mostly to strong vigorous young Men, to such as have a Plenty of rich Blood, and sparkling lively Spirits; especially to such as using to live freely, have inflam'd themselves with drinking, surfeiting, and gormandizing, and such as have weak Lungs, or infirm Viscera.

IT is of bad Consequence, if the Constitution of the Air cause the Small-Pox to be epidemic, and of an anomalous Sort.

IT is worse in the Flux, than Distinct Kind; in the Spring and Summer, than in Winter and cold Weather.

IT is not so mischievous, if the Party be old; be of a cold Constitution; hath been accustom'd to much Cloaths, both Up and in Bed; if he hath been let Blood and Purg'd before Eruption; if the Fever run not high.

SUCH new Things daily arise in Practice, that a Physician commonly finds it absolutely necessary to break general Rules, and suit his Advice to the particular Case.

THOUGH cool Medicines and Regimen are, for the most Part, to be used in a Fluxing Small-Pox, yet sometimes the contrary may be necessary.

I was with a Gentleman, who lay sick of a Confluent Sort; the sixth Day (or thereabouts) I found his Face, both Pustles and Interstices, look'd not pale, but quite white; his very Visage was frightfully altered, and it look'd just like a dead Face; his Pulse also fail'd much.

I consider'd he used to drink a pretty deal of Wine, though never to any great Excess; therefore I gave him presently a good Glass of strong Port-Wine; upon which his Colour, Countenance, Vigour and Pulse all grew better;

better; and I order'd a Glafs or two of the ſame every Day after, till he grew well.

SOMETIMES we meet with a Thing ſo exceedingly ſtrange, ſo like a Miracle, that we are almoſt tempted to believe the common Laws of Nature were ſuſpended purpoſely to bring it about.

THE following Account was ſent me by my much-eſteemed Friend Mr. *Greſt*, Apothecary at *Bath*: I know not what to judge of it, becauſe I ſaw not the Caſe; but tho' the Practice ſucceeded well, yet I ſuppoſe ſcarce any one that uſeth prudent Conſideration, and Caution, will dare to imitate ſo mad a Practice.

ABOUT the Year 1716, Biſhop *Hooper's* Grandſon, fifteen Years old, fell ſick of the Small-Pox at *Bath*; Dr. *Betteſon* (who liv'd there) found him, at the Time of Eruption, in all Appearance, expiring.

UPON this he ply'd him with ſtale Strong-Beer, Mountain-Wine, and Brandy: He drank plentifully of theſe Liquors twelve Days or more: He took a Bumper every half Hour, when he was awake.

I conceive it is meant a Bumper of Beer, and Wine only, and not of Brandy: And it is likely he took it not ſo often after the firſt Day, otherwiſe he muſt have lain ſo long in a continued State of Drunkenneſs.

HE recover'd; as alſo did two of the Lord *Paulet's* Sons, and two of his Servants. But by this Method ſome dyed.

## PARTICULARS of REGIMEN.

THEY are the little Matters of Common Life that we all live by ; therefore if I descend to such Particulars, as some may scornfully call Trifles, I am sure, if they be of real Use to Nurses and Tenders, I have no Reason to be ashamed of setting them down ; for, as one saith, *Ille in Morborum Scientia plurimum profecit, qui ne minima quidem contempsit*: He hath made a good Progress in the Science of Physick, that hath learned not to despise even the minutest Matters.

THE Chamber ought to be so situated, that if the Sicknefs happen in Summer, it let not in too much Heat and Light ; nor in Winter, the East or North Wind and Cold.

It should not be Noisy ; wherefore the Locks, Bolts, Hinges and Door ought to be oiled and made go without Squeaking.

It should not be little and stifling, but large enough (especially in hot Weather) for free Breathing.

THE Chimney must carry up Smoak well. Turf is a bad Firing, and Charcoal very pernicious.

HEIDE gives a Relation (*Obs.* 51.) of a Girl, who tho' the Fever and Small-Pox were moderate, and as well as need be, yet fell frequently into fainting Fits, which they saw no Reason for ; but at length discover'd, that the burning of Sea-Coals in the Room caused it.

It is good to hang up before the Windows Green Cloth, to shut out Light and Wind ; which is to be so done that it may be turn'd back to let in fresh Air whenever it is found needful.

MANY

MANY times it is hurtful to keep the Curtains close drawn, because they pen up the Air, and cause the Sick to breathe nothing but his own variolous Breath: If the Sick use in time of Health to lie with Curtains drawn about him, yet the Feet-Curtains may be left open.

THE Bed should be (especially in Summer-time) large enough for the Sick to turn about in.

IT should not be so soft, as to let the Sick sink down into it, and over-heat him; nor yet so hard, as to wring him, and hinder Rest.

IT were good to lay a Blanket (or much rather a Quilt) upon the Bed under the lower Sheet, which would keep it smooth, and hinder the Feathers from getting into Lumps, and the Sick from sinking in deep.

IF he be at any time oppressed with a Weight of Cloaths, or too hot in Bed, some of the Cloaths should be warily rolled off to the other Side of the Bed; and when he perceiveth any Want of them, drawn over him again.

BUT no fresh Garments are to be cast on the Bed, but those only which were laid off, or at least such as come off from a Bed that is constantly lain in.

I hold it a good Course, when Eruption begins, to put on Linen Gloves, Waistcoat and Drawers, all of Linen, and lie with them on all the while he keepeth his Bed.

FOR so if at any Time he kick off the Bed-cloaths, the Air cannot come immediately to his Body: And this Constancy of Habit will help to preserve a steady Degree of Warmth; which seems a considerable Matter in this Case.

BUT let him wear no Flannel or Cotton, or Woollen next his Skin, except Flannel-Stockens, to be after spoken of).

*Of the SMALL-POX.*

of) left when the Pustles come to break, and ulcerate, and run, it may fret and gall him.

HIS Shirt, tho' it be fouled with ulcerous Matter never so much, is not to be changed in the Confluent Sort, before the fourteenth Day, or till the Scabs be pretty well dry'd up, lest by the Freshness of the Linen, the Venom which hath not quite done steaming out yet, be stricken in again.

AND tho' the Shirt be moist with Sweat, it is safest to let it dry again on his Body.

As for the Nastiness and Stench caused by purulent Matter, it was never yet observ'd to do the Sick any Harm.

AT last, when his Shirt is chang'd, it will be convenient that one be put on that some other Person hath worn two or three Days, till the soapy Smell and Freshness be gone off.

LET not his Head be kept too hot with a thick Cap, for that usually causeth the Pocks to be thrown out plentifully in the Head, Face, Eyes and Throat, and many times injureth even the Brain itself, hindring Sleep, and producing Delirium.

HIS Head may not be hard bound with his Cap, but must be left loose and easy; for it hath been noted, that the Pustles which come out under strait Bandage, are always very broad and flat, and being hinder'd in their Growth, many times become so ulcerous as to leave ill-favour'd Marks upon the Fore-head.

AND, besides this, there must be Room left for the Head to swell at the latter End of the Sickness: Therefore it is good to put on such a Cap as is a great deal too big at first, and pin it to a fit Size; and so when the Head cometh to swell,

swell, it may be easily let out proportionably, and there be no need of a fresh one.

I would have no kind of Stay put to his Throat, till the Time of Eruption be over, or till Salivation arise: For, I am well assured, that keeping it hot bringeth abundance of variolous Matter and Pustles into his inward Parts, which are grievously troublesome at the End of Salivation, and frequently very dangerous.

IF he have any Rings on, let them be pulled off in time, lest after his Fingers come to swell, they may be too strait, and cannot be gotten off without a File.

BUT if the Rings were forgot, and must be filed off, it would be a convenient Artifice to slit a Goose-Quill, and having spread it flat open, to slip it in between the Ring and Flesh; so may the File be used without hurting the Finger.

IF his Brain seem much affected, and his Sleep be short and unquiet, I have thought, it will not be so well for him to lie much on his Back in Bed, because that Posture may make some Pressure on the descendant *Vena Cava*, and so be some Hinderance to the Current of the Blood down out of the Brain.

ALSO if his Back heat, and ake much; or there be any Sharpness, or Stoppage of Urine; or the Menfes break down, lying on the Back will be apt to increase them.

LET him be kept as easy in all Respects as possible, and free from all Disquiets and Perturbations of Mind, from Care, Fear, Sadness, Anger, &c.

WHEREFORE at first, let him use proper Means to make his Conscience his Friend: And then let him make his Will, and set his Affairs in such Order as he can to his own Satisfaction, that he may have nothing of Worldly Matters.

Matters to trouble him, while he is conflicting with the Violence of his Distemper.

LET him hear of no ill Accidents, or of the Death of any one; let nobody come at him, that will express Fear, or shew great Concern so as to make him mis-doubt himself; let there be no Whispering about him that may give him Suspicions, nor any Sighing or Weeping in his Chamber, nor any Thing that may in any wise foment his Jealousies and Fears, and depress his Spirits.

IN a Word, let him be kept constantly chearful and hopeful; let him be in all Things as little disturb'd, and as much humour'd as possibly may be with Safety and Prudence.

YET I have seen some, whom it was expedient to keep a little fearful, for thereby they were brought under Rule, and made willing and careful to observe the Physician's Orders.

BUT, in general, let him not be thwarted and cross'd in Things that are not manifestly hurtful; for if the Spirits be driven into Fury, they will never perform Nature's Work as they should.

ABOUT the Year 1671, when I was a Student at *Cambridge*, a Master of Art of *Peterhouse*, or *Pembroke-hall* (my Memory telleth me not now which it was) being delirious in the Small-Pox, most earnestly longed to have University Musick in his Chamber, and cry'd out for it Night and Day; and being deny'd it, grew outrageously mad.

WHEN they saw he was in no wise to be pacify'd without it, they yielded to him; and immediately as soon as ever the Musick struck up, contrary to the Case of Tarantulated Persons, where it sets all their Spirits that were at Quiet before, a Tripudiating; here it so compos'd his

his raging Spirits into a Tranquillity, that he soon dropt into a sweet and long Sleep; waked again perfectly sensible, and from that Time gradually recover'd.

THE Body must be defended from the Injuries of the Cold, and yet not kept extreamly hot. Dr. S. saith, such a Degree of Warmth as is natural and agreeable to the Temper of the fleshy Parts, is the most commodious for promoting of Expulsion; and if it be more or less than that, it is on both Sides dangerous, and is to be reduced to that Standard.

IF it be the hot Summer Season, and the Disease promiseth to be mild, he sees not why we should keep the Sick continually in Bed and close covered, but rather adviseth them to rise sometimes, every Day at first, provided only that Care be taken to secure them from too much either Cold or Heat.

THUS the Distemper useth to pass over with less Trouble, and in less Time than when they are confin'd altogether to their Beds.

FOR, a constant close Confinement doth not only add to the Tedioufness of the Sickness, but also augmenteth the Fury of the Fever; produceth a vast Quantity of variolous Matter; hindereth it from being extricated; either suppresseth Eruption, or throweth out the Pustles inordinately; produceth a Flux and Second Fever; causeth sometimes Purple Spots and Suffusions, bloody Urine, &c. And lastly, frustrateth the good Effects of Paregorics.

HE believes, that though it be not absolutely necessary in the Distinct and Mild Sort, that the Patient be kept out of his Bed at all; yet then also it may be better to keep him up in his Chamber in the Day-time, and let him go to Bed at Night only, till Eruption begin.

IN the Confluent Sort, he permitteth not a constant Confinement to Bed, till the Pocks are all come out, except in Cafes where the Sick cannot poffibly fit up.

BEYOND all this, he telleth us, it is not enough only to keep the Sick out of Bed the firft Days of the Sicknefs, but alfo fometimes it is neceffary to expofe him even to the open Air, namely, in an extream fultry Seafon, if the Patient be a lufky, ftout young Man; be of an hot Conftitution; hath accuftom'd himfelf to hot fpirituous Liquors, efpecially if the Diftemper came upon a drunken Debauch, and he hath not been let Blood: For in thefe Cafes, he thinks the precipitous Eruption cannot be fufficiently refrain'd by barely abftaining from Bed, and forbearing the Abufe of hot Cordials.

BUT when he is forc'd to let them lie wholly in Bed, he gives ftrict Orders, that they be not cover'd hotter than they ufed to be in Time of Health; and that there be no Fire in their Chamber, unlefs in cold Weather.

NEITHER doth he exact of them to lie always in the fame Place of the Bed, left immoderate Sweats fhould break out; which he doth experimentally know, and therefore doth ftrenuoufly aver, cannot be promoted without utmoft Danger.

BUT common Prejudice, and inveterate Cuftom will hardly allow of fuch Practices; and the ignorant malevolent Vulgar, that barks, as Curs do, at unufual Things, have clamour'd him for it.

NOW, to take off from this great and meritorious Man the Odium of Novelty, I fhall tranfcribe the following Paflage out of *Ranchinas*, p. 271.

*Notandum autem in quibusdam cafibus, fecundum Arabes Refrigerandum effe Aerem.*

*Primus*

*Primus est, cum nimium tecti, & coöpti Ægri suffocantur, & in Lipothymiam incidunt (ex Avicen. Fen. 1. Can. 4. Tract. 4. Cap. 10.) tunc Aeri frigido, vento etiam, paulatim tamen, Ægri exponendi.*

*Alter est, si dum erumpunt Variolæ, non sublevantur Ægri; sed perseveret, vel augeatur Inflammatio interna; & Lingua nigrescat: Tunc cavendum est à Calefactione Aeris: Frigidus, & suffitu quodum Cordiali alteratus est imperandus.*

WHEN the Sick is almost suffocated, and overcome with too much Cloaths and Heat, *Avicenna* adviseth to expose him to the cold Air, and even to the Wind: I suppose he means at an open Casement.

AND, in Eruption, if the Sick be not eased thereby, and the internal Burning persevere, or increase, he orders cold Air, and Air medicated with some Sort of Perfume; by which, perhaps, he might mean, that sweet fresh Herbs should be strew'd about in the Chamber.

### Of a PLETHORA.

IT is of two Sorts, the Vera, and Notha; the True, and Bastard.

#### The TRUE.

Take this to be that which our former Physicians understood by *Plethora ad Vires*.

It is such a Redundancy, and Throng of Blood, that it cannot well be contained, circulated, renewed, and depurated.

IT makes such Strangulations, and Stoppages in the Capillaries, that neither the Vital nor Animal Functions can be commodiously perform'd.

IT over-filleth, and burtheneth the Heart, Lungs, Blood-Vessels, and Viscera, so as to cause depressed and slow Pulse; difficult and short Breathing; swelling of the Veins; Redness of the Face, and Flesh; various Obstructions, (especially if the Blood be fizy) Flushings; Inflammations; Fevers; Hæmorrhagies; Sleepiness; Sluggishness; Lassitude, &c.

THIS is divided into Sanguineous, and Cacochymic.

IN the first, the Blood is laudable, and offends in nothing but Quantity; and then Bleeding only is indicated, without Purging.

IN the second, it offends in Quality as well as Quantity; and in that Case, Bleeding and Purging are both requisite, for Bleeding alone will not carry off Cacochymic Humours, nor will Purging diminish the Fulness of Blood.

### Of the BASTARD PLETHORA.

I Take this to be what is meant in Books by *Plethora ad Vasa*, and is properly nothing but Effervescence and Rarefaction.

THO' the Blood be not redundant, yet if it be filled with heterogeneous Matter, and be put into exorbitant Motion, it will fall into such Luctations, Ebullitions, and Rarefactions, that it can scarcely be contain'd in the Vessels and fistulary Parts of the Body.

FOR when there are confusedly mixed and complicated in the Mass, many Corpuscles of differing Sorts, as long,

long, short, obtuse, sharp, round, square, multangular, &c. forasmuch as by reason of the Discrepance of their Figures, they cannot join Side by Side in close Order, but only touch in Points, of Necessity they must keep Distances, and include many Spaces, and so have their superficial Quantity increased.

BUT if moreover, those Corpuscles be put into inordinate Motion, they will yet further expand, and swell, and stretch, and distend the Vessels.

THAT great internal Agitations alone, without irregular Mixtures, may be sufficient to cause Rarefaction, and Increase of Quantity, appeareth plainly by this.

HANG a Kettle of fair Water over the Fire; while it is cold, and quiet, it fills the Vessel no more than half full, but when the Atoms of Fire (like the Vital Spirits in the Blood) get in among it, and exagitate its Particles, and make it boil, it will rarefy and swell, and rise up even to the Brims of the Vessel.

BUT the more the Blood is replete with heterogeneous Contents, the more it will boil and rarefy.

THUS, if the Water in the Kettle be foul and muddy, the fiercer it will boil, and the more it will rarefy and will run out; whereas the fair Water would not rise above the Top of the Vessel.

TO bring all this to our Subject of a Plethora Notha :

THO' the Mass of Blood be not more in Quantity than the Capacity of the Vessels may conveniently receive, when there is no Fever, yet when it is replete with heterogeneous Matter (either bred in, or brought into the Mass) that hinders the kindly Mication of the Spirits, strikes them out of their Way, and irritates them, they vehemently expand themselves, and flying into outrageous  
Orgasms,

Orgasms, exagitate the Globules, kindle them up into a Flame, and excite such a Combustion and Commotion, as by altering the Positions of the Sides, Angles, and Points of the Particles, make the whole Mass liquify, effervesce, boil, rarefy, and swell up so as that it can scarce be kept within the sanguiferous Vessels.

THE Plethora Vera is to be known from the Notha by this; that whereas the former is constant, and (unless Causes happen) remains the same, without Increase or Diminution;

THE latter is only temporary; never cometh without a Fever, and when that Fever ceaseth, it certainly sinks away again.

It very often requireth no Bleeding at all, as above is said, especially in the following Cases:

1. IF the febrile Matter be not so much entangled in the Blood but that it may be certainly thrown out by orderly Paroxysms, (as it is in intermitting Cases) such a Plethora will sink into a due Dimension of its own accord, when the Fit goeth off, and the whole Mass will then be conveniently contain'd in its Vessels, and therefore there will be no Need of taking away Blood, to lessen its Quantity.

2. IF the Fever be caused, or accompany'd with such Matter, as hath something of a malignant Nature, yet if it be in a Way of Concoction, and is likely to suffer Expulsion, (which is the Case of Eruptive Fevers) and no Inflammation, or perillous Symptoms appear, let the Veins look never so full, they want no Depletion by Venæsection; and if Blood should be drawn, there might be danger of the Malignity's getting an Advantage of the Spirits, and ruining of the Blood.

3. BUT

3. BUT if the Matter be of so virulent a Sort, as to break the Globules all to pieces, dissolve the Contexture of the Mass, destroy the vital Functions, and animal Oeconomy, (as it is in some anomalous petechial Fevers, and the Bleeding Small-Pox) Phlebotomy cannot possibly do any good, but will weaken Nature, and hasten Death, and disgrace the Physician.

### LETTING of BLOOD.

**I**T must not be advised but with the utmost Caution and Discretion, partly because, if Success follow not, it may afford Matter of Scandal, especially if the Party's Friends, or Nurses were much averse to it; but chiefly because it may be really pernicious.

### *III* EFFECTS, and CONSEQUENCES of LETTING BLOOD.

1. **I**T may give such a Check to the necessary growing Fever, as to hinder Nature in her Work of Extrication, and confound and mix again the morbid Matter, and blend it in with the Substance of the Mass, after it was in a fair Way of Separation.

AND therefore, if the Febrile Ebullition rise not so high as to produce dangerous Symptoms in the two first Days of the Stage of Concoction, whilst the Work of Extrication is in Hand, Phlebotomy may commonly be omitted; for, in the two last Days of Concoction, when Subaction is a managing, if the Fever do grow to be pretty smart, it need not, for its own sake (where other Indications happen not) be lowered by Bleeding, by reason, it is a necessary Instrument of Nature that she makes use of to promote Expulsion.

2. WHERE

2. WHERE there is a great Degree of Virofity and Putrefaction, Bleeding may deprefs the Spirits, and take off the Spring of the Cutis, and weaken the Blood, fo as to render them unable, in the Progrefs of the Sicknefs, afterwards to encounter the Enemy, ftuggle with the Venom, and throw it off; therefore, whensoever the epidemic current Conftitution appears to be of an anomalous, virulent, and venomous Kind, a Phyfician had need to carry himfelf very circumfpectly in prefcribing it.

3. IT may fo leffen the Mafs, and empty the Veffels, that they lofing their Plumpnefs, and Springinefs, become unable to fend vigorously forth at firft the morbofe Matter, and, in after-Stages, Serum, and Effluvia, to rear and keep up the Puffles, maintain the Swellings, and bring on Maturation: Therefore, where there is not a pretty plain Plethora Vera, the Phyfician ought to deliberate well before he ordereth Venæfection.

YET we muft not, by avoiding one Extream, run into its Contrary; from audacious Temerity, to unreafonable Timidity, and fo debar ourfelves of fo noble a Remedy, when a Man's Life may be loft by it: For it hath fometimes admirable good Effects, and, in fome Cafes, is indifpenfably neceffary.

*The BENEFITS of LETTING BLOOD are thefe:*

1. IT may bring good Affiftance to ftuggling Nature in her Work of Concoction and Expulfion, by taking away the Burthen of a Plethora, and making Room in the Veffels, which were before fo crouded up and full, as not to permit regular Ebullition and Extrication in them.

IT is a Matter of melancholy Consideration, to think how very many gallant, strong, vigorous, young Men die of the Small-Pox, upon the Account of Fulness of rich Blood, and Vigour of Spirits, together with hot Regimen and Cordials; which, when the Blood was on fire before, make it, as it were, perfectly flame out, and destroy all before it.

IF such were very plentifully let Blood, to make Room in the Vessels, and to abate the Ebullition, many of them might be sav'd.

2. ANOTHER Benefit of Bleeding is, that it may prevent some of the ill Consequences of a too hot Regimen, if it be foreseen, that the Authority and Prohibition of the Physician cannot hinder it.

3. IT may qualify the Orgasm of the Spirits and Blood, so as to moderate the Fever, and either prevent a confluent Pox, or render it mild; and may be of signal Use where the Fever flusheth up to an extream Height at the Beginning of the Stage of Concoction, if there then be intolerable Pains, very sick, Vomiting, Shortness of Breath, Restlessness, want of Sleep, Delirium.

BUT if such-like Symptoms happen not before the two last Days of Concoction, just upon the Push of Eruption, it seems not adviseable to check Nature, when she is making an Effort to drive out her Enemy by way of Crisis.

BUT if they happen before that Time, and continue not beyond the two first Days of Concoction, Phlebotomy may come in very seasonably.

4. IT may procure that Paregorics, when needful, may have their desir'd Effects of quieting the Spirits.

AT the Time when Nature is intent upon, and labouring in the Work of Concoction, if Bleeding be then judg'd needful, perhaps it may be most adviseable to do it in the Foot; or if in the Arm, (as I apprehend the Matter) it will not be best to open a large Orifice, and take away apace a great Quantity of Blood at once, and perhaps cause a fainting Fit; for the Business here, is not (as in particular Inflammations) to make a powerful Revulsion or Derivation from a particular Part, but to diminish the Quantity of the Blood in general; and therefore I should like it better to bleed at Leisure, a little at a time, several times, till I have took away enough.

To this Purpose, I would let out not above two or three Ounces the first Time, and an Hour or two after as much; and so onwards, till I had got the Quantity I propos'd.

THUS I should draw off the Plethora, preserve the Spirits, and keep up that Vigour of Nature, which perhaps may be wanted the last Days of the Disease.

### PERSONS *not fit for* BLEEDING.

THOSE that are very young, or very old; those that are of a weakly, or worn-out and decay'd Constitution; that are Cachectic, Consumptive, Hydropic, Hysterick; that have low Spirits, and poor Blood; such as are apt to sweat, or use to faint in Bleeding; or such as look for the Menfes in a little Time.

PERSONS *fit for* BLEEDING.

**L**USTY, strong, vigorous young Men, that are well habited ; such as are at other Times apt to Inflammatory Distempers, Spitting of Blood, Fevers, Asthma ; such as have liv'd high, bred much Blood, and have lately inflamed it ; such as have been used to let Blood frequently, and drawn upon themselves a Necessity of using it often ; such as have any natural and usual Evacuation of Blood stopp'd.

*As to the* TIME.

**I**T may be ventur'd on with the more Boldness in the Spring and Autumn ; especially if the present Epidemical Constitution of the Season seem to require it ; and it hath succeeded well with others.

IF both Bleeding and Vomiting be judg'd necessary, it is the safest Way to use Bleeding first ; for hard straining, when the Vessels are full, may cause Extravasations, or perhaps Ruptures of the Vessels.

WITHOUT all Controversy, the sooner Phlebotomy is administred, the better ; therefore, if it be fear'd any one is about to have the Small-Pox, and it be judg'd he ought to bleed, 'twill be best to do it before he yet complains, or else upon the very first Perceivance of Disorder.

SOME have ventured upon it in the very Act of Eruption, or a Day or two, or even any time after.

BUT as to myself, I am almost ashamed to confess my want of Courage in this Matter ; for I am fearful of Bleeding when Subaction is begun, lest it should not only

make confus'd Work of it in the Blood, that is now upon the very Act of Separation ; but also damp the Fever, which (where there is much Matter) is necessary for Expulsion.

### Of the CHOICE of VEINS.

**I**N pestiferous Fevers, letting Blood in the Foot is recommended by *Galen*, and antient Fathers in Physic, as a most safe and most useful Practice.

*ZACUT. Lusit. Prax. admir. Obs. 45. saith thus : Infinitos propemodum Pestiferis, & Maleficientissimis Febribus decumbentes curavi, Plures sectâ Saphenâ, aut Scarificatis Cruribus evasere, quàm qui in initio morbi Basilica scissa ; nam ex illâ parte celebrata vacuatio Plenitudinem levat, citra multum Virium Dispendium.*

HE hath attended almost an infinite Number of Persons in pestilent Fevers, and observ'd more Recoveries from opening the Saphena, than Basilica ; because it evacuates without weakening.

HE saith there is an elegant History concerning this Matter in *Oribasius*, L. 7. *Collect. cap. 20.*

### Of Emetics.

**T**HEY are forbidden where Persons vomit hardly, with very great Strainings and Sicknefs ; as also in Hypochondriac, Hyfteric, Consumptive, and Hæmophic Cases.

I like them not well when they pump up Choler from the Guts, and evacuate yellow, green, bitter Matter, that should have gone downwards ; for such Vomiting causeth

causeth great Sickness and Anguish ; and sometimes, when it is once set a going, is not easily stopped ; and (as I apprehend) doth no great Good neither.

FOR perhaps the Bile serves more for the Separation of the liquid Part of the Chyle, from the thicker Mass or Batter that cometh out of the Stomach into the Duodenum, and for the Expulsion of Excrements through the Tract of the Intestines, than for any Use of seasoning, altering, depurating of any other Thing whatsoever in the Mass of Blood ; and so the evacuating of it can signify but little in the Small-Pox, whose Seat and Operations are not in the Intestines, but in the Blood.

BUT they are of very good Use, where any Relicts of undigested Food, retain'd in the Plicæ of the Stomach till sour, or otherwise deprav'd, make it uneasy, and occasion windy puffing up, Ructus, ill Taste in the Mouth, Drowsiness, Sickness, Nauseousness, Vomiting, &c. here an easy washing Vomit of Carduus Tea, may be well enough for this Purpose of cleansing the Stomach, and throwing out of it such Filth as lieth loosely in it.

BUT I must say, I like not of Oxymel and Oil mix'd into a Draught ; because it may be likely to take a Turn downward, and give such a Laxity and Lubricity to the Intestines, as may produce a Looseness.

BUT in Case clammy tough Phlegm, sticking to the Villæ, will not be carry'd off with mere washing, then Oxymel of Squills, or Radix Ipecacoannæ, either alone or together, with two Grains of Turbith Minerale, may be made use of : But I must say, I am not very fond of Vitriolum Emeticum, it having a Sort of a caustic Quality, and a certain Viofity, which sometimes leaves an ill Impression on the Stomach.

THUS

THUS far Emetics may be allowable; but if the Patient's Stomach was perfectly right and well before the Sickneſs attack'd him, and upon that he grew ſick, and fell a vomiting, without any thing taken that could cauſe it; and withal, if he brought up not much Foulneſs after the firſt Reach, and perceiv'd himſelf not at all reliev'd by it; then we may probably conclude, the Sickneſs and Vomiting were cauſ'd, not by any Matter congeſted in the Stomach, and there remaining, but by variolated Vapours and Serum brought into it by the Cœliac Arteries.

AND whenſoever it is ſo, I am poſitive, that the Matter being now in flux of its own Accord, Emetics will pump a great deal more of it into the Stomach, than would have come of itſelf, and ſo muſt needs increaſe the Sickneſs and Vomiting.

BUT this is not all; for it is to be much fear'd, that the Straining cauſ'd by Emetics, will ſo attract the Matter inward, as to fill the Throat, Oeſophagus, Ventricle, Inteſtines, and other Viſcera, with variolous Puſtles.

DR. *Hodges de Peſt.* p. 103. ſaith, *Chariffimæ Patriæ Salus*; the Safety and Health of his deareſt Country and Poſterity, exact of him to lay open the ignorant and curſed Practice of Empirics of all Sorts, who, by giving Vomits to thoſe that were taken with Vomiting in the Plague, increas'd the Symptomatic Vomiting, and thereby downright murder'd many.

A parallel Caſe, I take to be that Vomiting which Women with Child are frequently troubled with, which is cauſ'd by deprav'd offensive Humours or Vapours ſent into the Stomach out of the Blood, when the Stomach itſelf is not primarily in Fault.

CERTAIN Experience tells us such Vomitings are usually increas'd by Emetics, which draw more Matter inwards into the Stomach ; but are very much help'd by Phlebotomy, which retracts it into the Blood Vessels, or makes Room for its being retain'd in them.

THIS is a very considerable Thing in Practice ; and for these Reasons I declare I cannot come into it to prescribe a Vomit in the Small-Pox, when there is Vomiting already, especially near the Time of Eruption.

BUT when they are (upon the abovesaid Reasons) needful, the nearer the Time of Eruption is, so much the more gentle and mild the Emetics ought to be.

CONCERNING the giving of a Vomit in the latter End of the Sicknefs, when, after Salivation is gone off, the Patient is in Danger of being choak'd ; see hereafter in due Place.

### *Of* CATHARTICS.

**W**E must be very cautious in giving Purges to,

1. SUCH as are Hyfteric, and apt to have their Spirits dissipated, dejected, and so disorder'd, as to produce Fits, or other great Discomposures.

2. SUCH as naturally have weak slipperly Intestines, and used commonly, in their best Time of Health, to fall into Loosenesses and Gripings.

3. SUCH as cannot bear to have their Guts empty ; and if they are much purged continue weak and faint, and recover not their Strength, Vigour, and Appetite, till some considerable Time of filling up again.

THE

THE Times for purging, are, 1. Before Eruption.  
2. In the second Fever. 3. After the second Fever is gone off.

### I. *Before* ERUPTION.

**I**F the Party, before taken with the Small-Pox, be well both in Stomach and Intestines, and in a good State of Health, commonly there is no need of purging at all.

BUT if he hath made himself gross and full of Humours by eating, drinking, and Sloth; and also if his Intestines are full of hard Excrements, that have remain'd there for some time (for the Guts in time of Health never are, nor ever should be quite empty):

IN these Cases, exonerating the Intestines at first may be of very great Use to take away Impediments, and to give Nature fair Play.

AND also, since many times the Manner of the Small-Pox is such, as totally to shut up the Belly during the whole Decumbiture; whereby the Excrements daily increasing, may at length overstuff the Guts, and cause great Anxieties; Purging at first may prevent this Inconvenience and Trouble.

BUT then I would have the Purges given timely enough; and, if it may be, before, or at least at the very first Beginning of the Stage of Concoction, so that Nature may not be molested in her Work of Extrication and Subaction; and also, that there may be time for the Intestines to be replenish'd with a convenient Quantity of new fresh-made Excrements again; and that those too be made of Vegetable Diet.

FOR I suspect that those from Flesh, if retain'd too long in the Guts will corrupt into something of a cadaverous Substance; which being abominable to living Nature, and becoming, in some Degree, as it were, venomous, may not only ferment there, and trouble the Bowels, but also send such filthy odious Steams into the Blood and Habit, as will produce the worst of Symptoms.

THAT Excrements from animal Food are carrionish, and more offensive than from Vegetables, is plainly made out by Dogs, that stink abominably more when they have eat Flesh, than when they have fed on ground Oats, or such like Food.

PURGING must be (as before said) timely; for if the Intestines be depleted so late as not to have Time to be moderately repleted again with fresh Contents before Eruption begin, they will be craving, (as the Stomach is when empty and hungry) and thereupon, such an inward Weakness, Failing, and Faintness will arise, as to take away all the Vigour of the Spirits, and render them unable to drive out the Pocks at first into the Superficies, and the Serum and Steams afterwards into the Pustles and Interstices.

NOW, that the Intestines ought not to be empty, and famished, plainly appeareth from wise and good Nature's Contrivance; for to preserve inward Strength, and promote Diaphoresis, in this Distemper, she usually shutteth up the Belly, and keeps the Guts full commonly twelve Days together, till there be no further Need of an extraordinary Diaphoresis, and the Distemper hath run through all its Stages, or at least till about the tenth Day.

WHERE it can so be, I would have all the Purging quite over and past, timely enough for the Body to come to an absolute Quiet again, before Nature sets upon the  
I i Work

Work of Concoction, to the End that she may be fit, and in full Strength to go through with it.

ALSO I would have the Purging Medicine to be of the mild Kinds, which act only by way of Irritation in the first Passages, and go no further.

As for the stronger and hotter Sorts, such as Coliquintida, Gamandra, Scammony, Aloes, &c. which operate upon the Blood itself, and send into it acrid, fiery, septic Particles, they seem not convenient, because, whereas Nature is busy in picking out and separating the variolous Matter; if she have these troublesome Cathartic Particles also at the same Time upon her Hands, she will not be so able to dispatch both as she would be one only, and so Concoction may be imperfectly perform'd.

AND besides, if the Purge work strongly, it may evacuate so much of the Lymphatic Serum, that there will be Want of it in the Progress of the Distemper to afford a Quantity of Matter necessary for the raising and keeping up of the Pustles and Tumours.

### *Of EPISPASTICS.*

IN the Small-Pox, beyond any other Sort of Fevers whatsoever, the Serum of the Blood is so acrid and provocative to the vital Spirits, that it never lets them rest in Quiet, but continually drives them into Ataxies and Explosions all the Distemper long, insomuch, that it is found absolutely necessary to charm and lay them from time to time with Paregorics, as well as to mollify the Serum with Incrassants, and correct it with Acids.

THUS the variolous Fevers begin with Pains in the Meninges, Medulla Spinalis, and nervous Parts; cause  
Watching,

Watching, turbulent Sleep, Twitching of the Tendons, Head and Back-ach, Delirium.

AND the Mischief ends not here neither; for this Sharpness of Serum, and Fury of Spirits puts the Globuli into a Flame, breaks them into their Minima, dissolves the Contexture of the Mass, and (when it cannot be help'd by Nature, or Art) destroys all the Functions, both vital and animal.

AND every one knows, that even the outward Application of Cantharides doth so sharpen the Serum, as to cause Scalding of Urine, Strangury, Erosion of the Bladder, bloody Urine, and sometimes, saith Dr. *Willis*, a Dysentery.

AND besides all this, the Evacuation by them made is wholly of the precious Lymph; which, in all likelihood, will be dearly wanted at the latter End of the Distemper, and should be preserv'd.

FROM these Considerations, I am of Opinion, that Epispastics, during the Stages of Concoction and Eruption, are positively hurtful: And I wonder what those Physicians can aim at, and what they expect from them that prescribe them in this Time of Hurry, which instead of continuing and increasing, they should quiet, by pacifying the Spirits, and mollifying the Serum, and so take off the Troubles and Hindrances from Nature's Hand, that she may easily and freely work and go on with her Operations.

AND whenever Epispastics come in use, Emulsions, In-crassants or Acids ought to be given to take off their Malignity and Causticity.

BUT though I dislike Epispastics, and utterly forbid them in the first Fever, yet in the second all is alter'd; and if that runneth high, and threatneth Danger to the animal Functions, I judge them to be of such absolute Necessity, that they must in no wise be omitted.

FOR now the Case is fuch, that the Ichor in the Blood being turned into Pus, the Acrimony of the variolous Matter blunted and chang'd into a cadaverous Sort of Substance, which is like to poison the Blood, and overcome the Spirits; then Epispastics are of very great Use to rouse and give them new Vigour and Force, whereby to bear up against the Malignity, to strike off the putrefy'd Copulæ, and drive it out.

THEREFORE, when the Second Fever is like to be bad and dangerous at the End of Augmentation, (or the eighth Day after Eruption began) I would apply a large Blister (which creates no more Pain than a little one) *inter Scapulas*.

FOR, when apply'd to that Place, (besides the general Use of rousing the languid Spirits) it makes an Evacuation immediately from the Medulla Spinalis, and so from the Brain, and particularly from the Cerebellum; which to me seems a much more considerable animal Part than the Brain itself.

THE ninth Day, two may be apply'd to the Arms; the tenth, two more to the Ancles: And thus, by these successive Applications, we may increase and continue a full Force of their Operation till the Fire of the Fever goeth out, and the Distemper endeth, which is commonly on the twelfth Day.

IF, notwithstanding all these Blisters, the Spirits in these Days seem to sink and give out, we ought not to be content with these plain Epispastics, but, by way of bringing Auxiliary Forces to the Cantharides, join with them such hot potential Caustics as have a Faculty, not only of blistering, but inflaming also, and exciting Pain in the Part.

THE Niceness (and perhaps the Ignorance of the *Materia Medica*) of the present Age hath left all these out of  
their

their Epispastic Plaisters: But in a former Edition of the *London Dispensatory*, their Plaister contains in it *Sem. Sinap. Euphorb. Pip. long. Sem. Staph. agr. Rad. Pyreth.*

*Catapl. Apoplect. Bateanum* is to this Purpose.

BUT more of these hereafter, when I come to speak of the Second Fever.

### Of PAREGORICS.

THERE was an Age when Physicians were so terribly afraid of Opium, and all its Preparations, and Compositions, that they almost flung them out of the Shops, till *Platerus* brought them full in again.

SOME of our former Physicians absolutely forbid them in the Small-Pox; and that, perhaps, partly, because

THEY look'd upon this Distemper to be caus'd by a certain Malignity; and all Malignity being hostile to the Spirits, they thought it male Practice to give any Medicines of this Kind, which might bind up, depress, or make them unable to combate, and expel the said Malignity.

PARTLY because they look'd upon Expulsion to be a Crisis, and Opium to be a cold Thing, almost to the Degree of Poison, and believ'd it would quite stop it:

AND partly because they were got into a Conceit, that Malignity in the Time of Sleep retires to the Heart.

UPON these, and the like Considerations and Mistakes, many were fearful of indulging Sleep; and particularly *Riverius* himself, *Lib. xvii. Cap. 2.* saith, Sleep ought to be moderate thro' the whole Course of the Disease; but in the Augment, when the Pustles are broke forth, much Sleep is noxious, and it is better to continue much awake.

BUT

BUT Dr. *Sydenham*, who built his Practice not upon others Fancies and Opinions, but upon his own Observations and Reasons, introduc'd them into the Cure of the Small-Pox.

AND this was so great a Benefit, that if he had never done any thing in Physick, but this alone, he would well have deserv'd a Statue of everlasting Memory.

I am not for under-dosing of it, nor for dividing a Dose, and giving it at several Times, except in a Case hereafter to be mention'd, for that will but deceive the Physician, and not produce the desir'd Effect: A smaller Dose may be begun with, and increased afterwards, according as it fits the Patient; and when the proper Dose is once found out, that is to be a Standard, till the Case requires a larger.

CAUTION is to be used in the giving of it to Children; and to such as at other Times could never bear it; but I have seldom met with any that could not take it in the Small-Pox: I attribute this to the great Irritation and Orgasm of the Spirits, which is greater in this than in any other Distemper.

I have been told by a good practising Physician, that if Bezoar be given with it, it will not be disagreeable to any.

As I understand the Matter, Paregorics have their primary Operation not upon the Globules of the Blood; and therefore, when the Blood ferments, or boils violently, and greatly rarefieth, they are not properly prescrib'd for the Purpose of bringing it down to Temper again, for that is to be done by cool Regimen, Attemperants, and Acids.

BUT

BUT their Business is directly with their Spirits, and therefore, whensoever the Spirits are so provok'd and enraged, as to produce very ill Symptoms, and to hinder Nature in her salutary Operations, let it be at what Time it will, in any of the Stages, they must needs be pacify'd by Paregorics.

AND therefore, in the first or second Day of the Stage of Concoction, while Extrication is in Hand, if the Rage of the Spirits rise up to that Height as to cause intolerable Pain in the Head or Back, great Anguish, Inquietude, Delirium, &c. if these cannot be allay'd with good Bleeding, I think it would be adviseable at that Time to give one sufficient quieting Draught, and no more as yet, but to wait heedfully on its Effect, and then go on as shall be found expedient.

BUT the third and fourth Day, when the Work of Subaction is a managing, Paregorics seem to me not so absolutely necessary, because I judge a little Flurry of the Spirits useful (especially where a great deal of Matter hath been assimilated) for the forming of the Particles that were extricated, and fitting them for Eruption.

IF in the Time of Eruption, tho' the Fever run high enough, (that is, if the Pulse beat up to 50 in half a Minute, and Respiration go to about 16) and yet the Pocks break not out well, and troublesome Symptoms remain, a Paregoric will be found of excellent Use.

IF in the Stage of Augmentation (which should be in a Confluent Small-Pox, the quietest Time of all, as being between the first and second Fever) there be Inquietude and Want of Sleep, and the Pustles grow slowly, and the Interstices want Colour, and the Face swell not at all, Paregorics mix'd with Cordials will be very beneficial, and that not only to rectify the present Circumstances, but

but also to prepare Matters for the next Stage, that it may be pass'd with less both Trouble and Hazard.

IN the last Stage (of a bad Confluent Small-Pox) Paregorics can in no wise be safely forborn.

FOR, at this Time, Nature is struggling for Life; the Pulses run so swift, and are so low, that they can scarce be told distinctly; Breathing is short and laborious, and the acrid Malignity molesteth the Spirits to that Degree, (now when they are much wasted and weaken'd) that unless they can be something brought to Rest, and recruited, it is impossible they should hold out long.

DURING the Stage of Augmentation, even till the seventh Night, it will be well to give the Pacific exactly at an Hour, that Nature may be used to Regularity, namely, at nine at Night.

BUT because from that Time we look for the second Fever, and its Manner is to come with a Paroxysm every Evening, it will be convenient then to increase the Dose of the Paregoric, and (in order to anticipate the Paroxysm) to rise an Hour every Day.

THUS, the eighth Day at eight a Clock, the ninth at seven, the tenth at six, the eleventh at five, and the twelfth at four in the Afternoon.

BUT it lieth upon the Physician to observe exactly himself, with his own Eyes, (and not wholly by what the Nurses tell him) how long the Force of the Medicine holds, and constantly, as often as it goeth off, to repeat it.

So it may, and must be given when its Efficacy expires, in less than a Night and a Day's Space; and as often as the Patient grows much distressed again, it must be repeated *totiès quotiès* as at 18 Hours Distance, 12 or 8: Nay, I have known, where the Sick being not able to bear a  
common

common Dose, have had a Necessity of taking it every four Hours.

I lay the utmost Stress upon this ; forasmuch as I have seen, where, upon one single Omission of it, the Spirits have quite fallen down, and never could be rais'd any more.

AND I am positively certain, that the Neglect of it hath prov'd fatal to many a one, whom this *Manus Dei*, if it had been laid hold of, would have drawn out of the Jaws of Death.

PAREGORICS are, *Pil. de Stiracæ, Pil. Matth. Laud. Londin. Laud. Liqu.*

BUT the most used of all is, *Syr. de Mecon.* from  $\mathfrak{z}\beta$ .  $\mathfrak{3x}$  or  $\mathfrak{3j}\beta$  in proper Mixtures.

TO Children may be given Tea made with Cowslip Flowers.

FROM the Beginning of Eruption to the 5th Day, if the Fever run too high,  $\mathfrak{R}$  *Aq. Laet. 3ij. Syr. de Mecon. 3j. Ol. Vitriol. gt. vj. vel viij.*

FROM the Enterance of the Augment to the 9th Day it may be given thus :  $\mathfrak{R}$  *Sperm. Cit. Vitel. Ov. aa. 3j. Syr. de Mecon. 3j. Aq. Laet. Alexit. 3ij. m.*

FROM the 9th Day (when the second Fever beginneth, to the End of the Distemper) I hold it good to give it thus :

$\mathfrak{R}$  *Sal. Prunel. 3℥. vel gr. xv. Aq. Laet. 3ij. Diacod. 3x. m.*

WHERE the Sweetness of the Syrup is nauseous, we may give it and Liquid Laudanum, of each half a Dose together.

BUT without any Sugar at all I have given this :

℞ *Capit. Papav. alb. concis. (sine semine) ʒj. coq. in Aq. ʒix. ad ʒiij. f. express. fortis pro una dosi.*

MORE shall be said of Paregorics in the second Fever.

### ATTEMPERANTS and CORRECTIVES.

THE Serum of the Blood being, by the Admixture of variolous Corpuscles, made so acrid and pungent, as perpetually to exasperate and exagitate the Vital Spirits, and put them into such Disorders, that they cannot rightly manage the Works of Concoction and Expulsion at first, and Maturation afterwards, it ought to be corrected and mollify'd. This may be done,

1. By increasing its Quantity, and diluting it : To this Purpose the Sick should drink freely, only without overcharging or palling his Stomach : But this seems not so needful in the first Stages, till the Augment ; and after that is begun, he cannot well drink too much.

DRINKS in Specie are spoken of before.

2. BY Acids, which are the true and proper Correctors of Acrids. When therefore in any of the Stages, before that of Augment be fully ended, if the Heat and Hurry of the Fever run high, if there be Watching or Delirium, if Hæmorrhages, red Flushings, or petechial Spots appear, Acids and Paregorics are the best Things I know of.

THE most potent Acid is *Ol. Vitriol.* not dulcify'd with Spirit of Wine ; for that dulcifying is, in my Opinion,  
quite

quite spoiling it of its Virtue, and rendering it a weak Business, good for nothing.

It may be dropt into all the Liquor he drinks.

*Infus. Rosat.* or,  $\mathfrak{R}$  *Aq. Lact.*  $\mathfrak{z}$ ij. *Syr. de Mecon.*  $\mathfrak{z}$ j. *Ol. Vitriol.* *gt.* viij. *m.* This makes it very sharp. But in Case of an Hæmorrhage, I have given it in greater Quantities, as shall be seen hereafter.

3. By soft Incrassants and Emollients; which thicken the Blood, sheath up its sharp Edges and Points, and preserve its Crasis from putrefying Dissolution.

SUCH as these are Figs, Raisins, Roots of Althæa, Liquorice, Herb of Mallows, Almonds, Pearl Barley, Shavings of Hartshorn, Honey, Syrups.

To this Purpose Gum Lacc Tragacanth, and Lentesc, were used by *Rhazis*, *Avicenna* and the *Arabians*; but they have been long left off by our more modern Physicians. Their Reason, I suppose, was because they understood not this excellent Use of them, and fear'd Incrassants would hinder Eruption.

BUT as for Gum Lacc, I here note, that it is improper for Decoctions, because it gives them an ungrateful Bitter.

It may be used in Powder thus:  $\mathfrak{R}$  *Gum Lac.*  $\mathfrak{z}$ ss. *Coccinel.*  $\mathfrak{z}$ ss. *f. Pulv. vel cum Succo Chermes f. Bolus.*

$\mathfrak{R}$  *Ras. CC. Ebor.*  $\overline{aa}$ .  $\mathfrak{z}$ ss. *Conservæ Ros. rub.*  $\mathfrak{z}$ iiij. *coq. in Aq. Hord.*  $\text{lbij}$ . *ad ij. in Col. dissolve Gum. Tragac.*  $\mathfrak{z}$ iiij. *m.*

$\mathfrak{R}$  *Hord. perl.*  $\mathfrak{z}$ ss. *Rad. Alth. Glycyrrh.*  $\overline{aa}$ .  $\mathfrak{z}$ j. *Fic. Passul. Sol.*  $\overline{aa}$ .  $\mathfrak{z}$ ij. *coq. in Aq. font.*  $\text{lbij}$ . *ad ij. f. Col.*

℞ *Fic.* ℥iiij. *Glycyrrh.* ℥℞. *Coccinel.* ℥℞. *coq. in Aq.* lbij. *ad ij. in col. dissolv.* *Gum. Arab.* ℥j.

℞ *Gum. Arab.* ℥j. *dissolv. in Aq. Hord.* lbij. *atque cum Amygd. d. excort.* ℥j℞. & *Sacch. alb.* ℥j. *f. Emulsio. f. a.*

### STOMACHICS.

WHEN the Distemper proceeds rightly and regularly, without any ill Symptoms that require a particular Regard, it will not consist with either the Dignity or Sincerity of the Physician, to be over-officious in putting Nature out of her Way.

BUT when the Stomach is weak, and faint, and sick, and there is no great Heat and Thirst withal, such Medicines are then indicated, as have Power of warming, cheering, and comforting the Stomach, and putting the Spirits, that are there stationary, into an Ovation.

THESE consist of vinous Spirits, Aromatics, and Subastringents.

℞ *Aq. Lact. Alexit.* ℥vj. *Menth.* ℥ij. *Cinnam. fort. Absint. Comp. Epidem. Theriacal.* (sine Acid)  $\overline{aa}$ . ℥℞. *Margarit. lævig.* ℥j. *Sacch. Cand. alb.* ℥iiij. *m. f. Julep. Perlat.*

IF by reason of the Soreness of the Throat the powder'd Pearl be troublesome to swallow, then, instead of it and the *Saccharum*, *Syr. Caryoph.* ℥j. may be used.

IF when the Stomach calls for Comfort, the Blood at the same time is hot, and runs too high, and the Pulse beats up feverishly, it will be adviseable to give of the Julep but one Spoonful at a time, and very often, to the End that it may affect nothing but the Stomach itself, and be diffused and wholly spent there in that Part; for  
a greater

a greater Quantity would be apt to enter into the Blood, and heat it more.

CORDIALS,

**A**RE such as increase the Ebullition, and quicken the Circulation of the Blood, and invigorate the whole System of the Spirits.

THESE are to be given once in eight, six, or four Hours, according as the Physician's Observation shall direct.

BUT the Pulse best of any thing indicates the Use ; for I look upon 40 Pulses in half a Minute to be a common Standard in time of Health ; and according as I find more or fewer in that Space of Time, I make my Judgment of it, that the Ebullition and Current of the Blood ought to be spurr'd on, or held back.

THESE must not be given (as the Custom of some is) to all in general throughout every Stage of the Disease, without Distinction and Judgment ; but only to such as really need them, and at those times when the Case requireth them, and never else.

WHEN the Pulse beateth below 40 in half a Minute, and the Patient groweth sick and faint, and the Pustles and Interstices become pale, it is then evident that the Ebullition and Circulation are remiss and sluggish, and the Spirits are oppress'd ; in this Case Cordials are opportune and necessary.

BUT let it be heedfully observ'd, that as soon as ever the Pulse is restor'd and invigorated, Cordials must be instantly left off again, till there be another Call for them.

THOSE

THOSE that have been Wine-Drinkers, may take warm Cordials more freely, than such as have lived on small Liquor.

BUT it very rarely happens, that there is any Need of hot, spirituous, aromatic, bitter, testaceous, or other Sort of Cordials, during the whole Course of the Sick-ness.

AND I am as certain, as I can be of the most assured Thing in the World, that if they be given when the second Fever runneth high, they will flush it up into a Flame; and be, if not mortal, yet extremely pernicious.

As to Alexipharmacs, they ought to be of such a Nature, as being directly opposite to the variolous Venom, are apt and able specifically to encounter and conquer it.

BUT it is utterly impossible for us to look into the internal mathematical Forms and Figures, and Operations of Things; and therefore we must never hope to find out such specific athletic Antagonists, but must be content with such common Cordials as these:

*Rad. Contray. Serp. Virgin. Flor. Croc. Calend. Margaritæ  
Ambragris. Coccinel. Succ. Chermes.*

*Aq. Ceras. nig. Lactis. Alexit. Menth. Rutæ Aq. Absint.  
Comp. Cinnam. Epidem. Peon. C. Theriacal.*

*Pulv. è chel. Comp. Lap. Contray. L. de Goâ. Spec.  
Diamb.*

*Diascord. Mithrid. Theriac. Androm. Syr. Caryoph.*

I look upon vinous Spirits to consist of such Particles, as being of a caustic Nature, are apt to scorch the Globules,

bules, crisp up the Fibrillæ, and hurt the Crasis of the Blood; and therefore, in my Judgment, they ought not to be over plentifully used in Juleps.

I conceive that variolous Matter is acrid and subtle, and something akin to chymical volatile Salts; and therefore (except in Case of Drowsiness and Stupor) I never order *Sp. CC*, *Sal. Armon.* or the like volatile urinous Spirits, (till the last Stage) for fear they, joining with the morbidic Particles, should increase the Orgasm.

SOME would have a Bezoartic temperate Cordial given always with a Paregoric, that it may, in time of Sleep, be carry'd and dispers'd the better into the Recesses of the Brain and whole Body, and may the more quiet and comfort the Spirits, Blood, and Fibres, and render them able to bear up under the Weight of the Narcotic.

### Of PERFUMES.

BESIDES these Cordials that exagitate the Blood, and invigorate the vital Spirits, I wish we could find out also such as may have such Faculties as immediately affect the Animal Spirits; namely, 1. To increase them. 2. To shake ill Copula's off from them. 3. To clear the Ways in the Brain and Nerves for them.

FOR these Purposes, I propose to our Physicians to recal the Odorata into the Shop again, from whence they have of late been banish'd; for tho' *Hippocrates* would have the Physicians go perfum'd, that they might be the more acceptable to their Patients, the governing Fashion now a-days, is to think that all Sweets hurt the Head, and no body must endure them.

BUT I know not how our Nature should come to be so strangely alter'd from those that liv'd three or fourscore Years

Years before us; for tho' they seem'd to be in all Points of the same Nature with us, yet every one that was able to procure them had his Odorata.

THEY had their sweet Waters, Pulvillo's, sweet Bags, Pomanders; their Cloaths and Gloves were perfum'd; their Canes had Civet Heads; all the Powder for the Hair was sweet-scented; every one carry'd in their Pockets Apoplectic Balsam; many of the fine Cakes, Puddings, and Sweat Meats had Ambergrise in them.

BUT as for the Apothecaries Shops, they were wonderfully stored with Odorata, as being Ingredients in the following Medicines, according to the *Pharmac. Lond.*

*Antid. mag. Matth.*

*Aq. Cœlest.*

*Sp. Lavend. Comp.*

*Spec. Arom. Caryoph.*

————— *Rosat.*

*Cordiales Femel.*

*Cordiales temperatæ*

*Diarrhod. Abbat.*

*Lætific. Gal.*

*Pul. Cord. major*

*Pleres Archonticon*

*Confect. Alcherm.*

*de Hyacinth.*

*Dia cinnamomum*

*Liberans*

*Elect. de Gem. calid.*

————— *frigid.*

*Diambrae*

*Diascord.*

*Diasatyrion*

*magis grat.*

*Diamoschu dulce*

*Tryphera major*

*Laudanum Lond.*

*Nepenth. Opiatum*

*Troch. Gall. Mosch.*

*Bec. alb.*

NAY, they put them even into their Plaisters, as *Empl. Stomach. Mag. & Emp. Metroproptoticon.*

AND whereas no body in our Days can bear Rose-Water, and crieth Foh where they meet with it, our Shops were formerly order'd to have upon Occasion *Aq. Mariæ fulep. Alexand. Jul. Rosat. Syr. Cardiac.* all which were made with Rose Water.

I acknowledge

I acknowledge they are offensive to some Hyfteric Persons ; yet I have known where the Fœtids have disagreed, and Musk Pills have much comforted and strengthen'd Hyfteric Women.

WHEN they cause Dulness and Head-ach, I conceive it's not because they are adverse to the Animal Spirits, and hurt them, but because they something open the Cortex Cerebri, whereby more Vapours, or groffer Vital Spirits enter and fill it up too much ; and yet at such a time it may perhaps be, that there is a greater Quantity of Animal Spirits distill'd, than when the Head seems clearer.

IF they did really burthen or hurt the Spirits, those Physicians must be very grossly mistaken that prescribe (as Dr. *Sydenham* doth) Ambergrise for Prevention of an Apoplexy.

THE Odorata are principally three, Civet, Musk, and Ambergrise ; the particular Virtues of which, according to the Opinion of Naturalists, may be seen in *Schroder* ; but the pleasantest, cleanest, and finest of these is (especially as to me, and my liking) Ambergrise.

### Of AMBERGRISE.

IT is not generally known what this is, but a certain Merchant assur'd me, it comes from a particular Whale, and that not as a stercoraceous Excrement, but as a Scent doth from some Quadrupeds, which Dr. *Grew* saith, have a Bag on each Side of the Anus, out of which they void a Substance according to their Nature ; a Civet-Cat, a Sweet ; and a Pole-Cat a Fœtid Matter, &c.

THIS being voided by the Whale, floateth in the Sea, and is thence thrown up upon the Shore, and there collected.

*TRAPHAM* (of the State of Health in *Jamaica*) treats of this Matter more amply than any other Author that I have yet seen; and because it is (as I think) a Book now in few Hands, I shall transcribe out of him as followeth, *p.* 142.

AMBERGRISE is a general Restorative, and tho' an high, yet a most innocent Cordial, where-ever Nature needs Succour.

IT is usually found where there are venomous Fish, as about the *Bermudas*, *Bahama* Islands, and the Coast of *Florida*.

THE Inhabitants of such Places, when poison'd with Fish, betake themselves to Ambergrise, as a most powerful Antidote, and are cur'd and rescu'd therewith from most horrid Symptoms, threatening Life.

FROM the good Success it had against Poisons, the People there ventur'd on it in almost all their Weaknesses; in great Evacuations by Vomiting and Stools, and all other too liberal Discharges of Nature, and Loss of Strength.

IN Dispiritedness from Fevers, or any other Effect, they happily take Ambergrise.

THEY stand not on Quantity from any other Cause, but the Preciousness and Price of the Commodity. I have seen a Man eat 3ij. of it at a time, without any Prejudice to himself, or any Alteration, saving that he was cheerfully dispos'd, as Persons are by drinking good Wine, or by the Use of Opium.

BUT

BUT Ambergrise excels both, for it neither stupifies nor intoxicates; but its odoriferous Parts unite with the Spirits themselves, and strengthen them, and thereby enable them to cast forth an Enemy, or receive its Assault without sinking under the same.

THE Advantage of such Auxiliaries, far exceeds the inflammatory transient ones of burning vinous Spirits.

OUR Ambergrise is not like those volatile Chymical Spirits, which, like foreign Pigeons, tho' they may for a while augment the home-bred Stock, yet quickly deceive the Hopes of the Owner, and fly away, carrying with them those that were his own.

THE Stomach, when it has receiv'd Ambergrise into it, rejoiceth therewith, and sendeth its delightful Perfumes into the whole Body; whereby the Spirits, especially the Animal, are not wasted nor heated, but increas'd, refreshingly cherish'd, strengthen'd for their proper Functions, and for the Ejection of foreign morbid Taints.

I dare affirm our Ambergrise to be our most universal and generous Cordial, from which no Detriment (if rightly given) ever happens, but great Benefits ensue from the taking of it.

*Of the NATURE and SORTS of the SMALL-POX.*

THE Small-Pox and Measles, and all their Kinds and Kindreds, are commonly call'd inflammatory Fevers, but (I think) improperly; forasmuch as,

1. SOME of them are without any Inflammation at all.
2. They never produce a particular Inflammation on any Part, as a Pleurisy, Peripneumony, Quinsy, Erysipelas,

&c. do. 3. They proceed from a Cause that is *toto genere* of a different Nature, namely, a venomous Matter. 4. They are not to be cur'd as Inflammations are, by large and repeated Bleeding.

THEREFORE I am inclinable to allow them a Class by themselves, and give them the Title of Exanthematous or Eruptive Fevers.

THO' all the true Variolæ have the same material Cause, and therefore differ not essentially, yet by reason of many different Degrees of Acrimony, and of many great Symptoms attending one Sort, and not the others; also because of many different, and often directly contrary Methods, Medicines, and Management requir'd, I divide them into Four Sorts.

1. Distinct. 2. Contiguous. 3. Confluent. 4. Bleeding.

### I. *The Distinct SMALL-POX.*

**I**N this Sort the variolous Matter is chiefly in the Lymph, not intimately among the Globules.

It putteth not out universal Efflorescencies, nor flat Spots, but fair reddish Pimples; and the Blood being thereby entirely discharg'd, and absolutely freed from the morbose Matter, the Fever sinks away, the Pimples stand up all distinct, grow in Bigness, (some as large as Peas) gradually run through all the Degrees from Crudity to Maturation, and then fall off in dry Scabs, in about nine Days after Eruption began.

### II. *The*

## II. *The* CONTIGUOUS SMALL-POX.

**I**F the Matter of the Distemper be very hot, corrosive, volatile, and venomous, as it happens to be in Epidemic Seasons, and in some Persons that are apt to be Feverish, or have been treated with a hot Regimen, it will not only get into the Lymph, but will also mix in among the Globules, and put them into a strong febrile Commotion before Eruption.

AND not only thus, but also it will assimilate great Quantities of variolose Corpuscles in the Blood; which, upon Eruption, will produce Pustles so close set together that they almost touch, yet do not flow into one another.

THIS being a middle Sort, between a Distinct and a Confluent, runneth sometimes into the one, and sometimes into the other, and so taketh its Nature accordingly.

IF the Spirits be not over-much irritated, and the Matter be not so fast lock'd up in the Size, but that it may be pretty well extricated, and the greatest Part of it thrown out into the Habit of the Body in the four Days which Eruption ought to be perform'd in; and after that, can effectually be kept out, and not absorbed again into the Blood;

THEN the Fever will sink gradually and proportionably to the Concoction and Eruption, and be diffused and finished, as a Distinct Sort is, in eight or nine Days.

BUT in Case it so happen, that at first, Expulsion cannot be intirely perform'd, and afterwards all that Part of the variolous Matter, which stayeth yet in the Blood, cannot be concocted, and in the Days of Augmentation and Maturation

turation cast off by Salivation and Tumefaction, though the first Appearance of it was Contiguous only, it will pass into the Nature of a Confluent Small-Pox, and require as long a Time as it, to finish all its Stages.

### III. *The* CONFLUENT SMALL-POX.

**I**F the Epidemic Season incline to a Flux; if the Party be of an hot Constitution; have much enrich'd, or overheated his Blood; and, together with this, in the Beginning of his Sickneſs hath been ſweated, or manag'd in the Way of an hot Regimen, and Bleeding hath been omitted :

IN theſe and the like Caſes, upon the Entrance of the variolous Matter into the Blood, the vital Spirits will fly into a Rage, the Globules will flame, a Fever and ſharp Symptoms will ariſe, and will begin ſo to do, even in the firſt Days of Concoction.

IN this perturbed State, a greater Quantity of variolous Corpufcles will be generated, than Nature can well, in the Term of Concoction, manage and diſpoſe of.

UPON this, tho' there come out an infinite Number of Puſtles clustering, and flowing into one another, yet at the ſame Time, a vaſt Portion of other Matter not being able to make its Way; partly for want of Room, it ſtick- ing in the Paſſages in Crowds and Throngs; and partly for want of due Subaction and fitting its Magnitudes and Figures to the Pores of the Skin; I ſay, a vaſt Portion more tarrying yet in the Blood, ceaſeth not to enrage the vital Spirits, and diſorder all Oeconomy: And for this Reaſon the Symptoms ceaſe not upon Eruption, as they uſe to do in the Diſtinct Sort.

*I reckon*

*I reckon three Degrees of the* CONFLUENT  
SMALL-POX:

1. **T**HAT which we may call putrid; the Blood being something corrupted, dissolved, and in a purulent State. Though here the Fever may run pretty high, and cause Thirst, and hinder Sleep, yet I think it never is attended with Sicknefs, or any other very grievous Symptom, neither hath it any sensible Paroxysms in the Evening, nor threateneth it much Danger.

2. **T**HAT which we may call a Malignant Flux, where much variolose Matter is generated, and so inviscated, that it cannot be separated from the Blood in due Time; but being there retain'd, heated and made virose and ferine, causeth the Fever to pass beyond the Degree of putrid into malign.

It dissolves the Contexture of the Blood, dries up the Globules, scorseth its Fibrils, and turns it into such a Mass as is wholly unfit for the Production of Spirits, and common Uses of Life.

Also it overpowereth the Spirits, fatigues and wears them out, drives them out of the Body, or kills them in it; and so the whole animal Oeconomy failing, the Sick dieth, or is a long Time recovering.

3. The third is the Bleeding Small-Pox; of which I design to treat in a Chapter by itself.

*The STAGES of the SMALL-POX.*

**I** Reckon Five, 1. Assimilation. 2. Concoction. 3. Eruption. 4. Augmentation. 5. Maturation.

As for Declination, I think that cannot properly be accounted a Stage of the Small-Pox; because when Maturation is finish'd, the Distemper is gone and pass'd. Instead of that Period, I intend to speak of what is fit to be known, and done, at the End of the Sicknefs, under an Head by itself.

DR. *Willis de Feb.* p. 79. saith, Critical Motions in continual Fevers, for the most part observe the fourth Day.

## I. STAGE ASSIMILATION.

**T**HE variolous Particles when produc'd out of the Ovula, are so active, and multiplicative, that even the hundredth Part of one Grain of them is sufficient to assimilate all it meets with in the Mass of Blood, that is capable of such a Change.

AND this should not be judg'd impossible, no nor improbable neither, forasmuch as we see the like in other subtile Poisons; as in the biting of a Viper, mad Dog, or Tarantula.

IF the Party infected be healthy at other Times, clean, cool, and hath not been heated by over-bad Management and Medicines, and Nature be permitted to proceed in her own leisurely, quiet Way, probably there will be but a small Quantity of variolous Matter assimilated; and that which is, will prove but a weak and mild Sort of Venom.

UPON this Account it is, that a true, regular, distinct Small-Pox hath, of its own Nature, little or no Danger in it.

BUT if the morbose Particles meet with a plethoric Body, overcharg'd with fermentative, inflammatory Humours :

OR if, by reason of great Heat, Ebullition and Conquassation, occasion'd by rich Blood, juvenile Vigour, ill Treatment, or otherwise, they come to be elaborated and exalted up to the highest Degree, and be subtilized and divided into their minutest Atoms, and together with it be also made igneous, and ferine; they will every where disperse themselves thro' the whole Mass, mix in with it *per minima*, and fire it intimately, as one Spark will another, till all be in a Flame.

THIS subtile and fine Divisibility and Interspersion through a liquid Vehicle, may be illustrated and made plain by Mr. Boyle's Experiment, namely, that one single Grain of Copper dissolv'd in Spirit of Sal Armoniac, will give a blueish Colour to 513612 Grains of Water. And, since nothing can give Colour but where it is, it must needs be, that the Grain of Copper was actually divided into so many Particles, and they were interspers'd thro' all the Water; for where there was Colour, there must be Copper, since a Quality cannot subsist without a Substance.

THESE variolous Atoms, and the vital Spirits, are such mortal and irreconcilable Enemies, that where-ever they meet with right Forces on both Sides sufficient for an Engagement, the little furious Champions fly at one another, and never give over the Combat till either the variolous ones are beaten, and driven out of the Body, or till the Spirits being vanquish'd, die upon the Spot; but sometimes it is many Days before the decisive Stroke is struck.

I allow for this Stage of Assimilation, sometimes four Days, sometimes six, before that of Concoction beginneth: But whether it ends precisely when Concoction begins, I have not, to my own Satisfaction, discover'd as yet, and I very much believe it doth not, in a Confluent Small-Pox, as long as the first Fever continueth.

THIS Account of four and six Days, I take from the Manner of the inoculated Sort, which I look upon as the Standard of the Regular, Distinct Small-Pox.

FOR, from the putting of the pocky Pus into the Incision, there are taken up (in all that I have observ'd) in some eight, in some ten Days before Eruption cometh; four or six of which being set off for Assimilation, the remaining four will be the just Time that Nature appoints for Concoction.

THIS Stage is to be very accurately observ'd, and Matters in it carefully and skilfully manag'd, for it lays the Foundation of the ensuing Sickness, and the most considerable Symptoms and Manner of Proceedings thro' all the following Stages, and Danger or Safety mainly depends upon this.

AND particularly, Safety depends not only on the Mildness of the variolous Venom, but very much also upon the small Quantity of it, and Fewness of the Pustles, as the contrary Danger will be from their Abundance.

BUT because the very precise Time of receiving Infection cannot (except in the Case of Inoculation, and some others) be certainly and exactly known, we can seldom tell how to begin our Account for Assimilation.

DURING this Stage, it's common for the Party to be just as well as he used to be, and to walk or ride about as before, without any manner of Complaint.

YET

YET some will feel themselves a little indispos'd, tho' not downright sick; shall have inconstant Feverishnesses; shall shiver, and then flush, not all over together, but in several Parts; shall have flying Pains in their Limbs; shall be out of Order one Day, and well again the next; and so on at uncertain Times, be ill and well for four or six Days before a settled Fever and Concoction begin.

THE great Business now will be, to hinder and moderate Assimilation as much as can be done with Safety.

THEREFORE, as soon as any one suspecteth himself infected, it will be adviseable that he wholly abstain from Flesh-Meats, and strong Liquors, carefully keep himself from catching Cold, and from all Disorders both of Body and Mind.

AND now at this Time, Nature having not yet begun to work upon the variolous Matter, and the vital Spirits and Blood being not yet exagitated and discompos'd, Bleeding, Vomiting and Purging, if they are judg'd needful at all, may have Place.

### *The Second* STAGE. CONCOCTION.

NATURE, not only in the Formation of Vegetables and Animals, but in all her Operations and Productions, when not put by her own Ways, proceedeth quietly, leisurely and gradually without Hurry or Stop.

THUS in the Small-Pox; when she is upon the Business of Concoction, she at first works coolly, moderately, and easily, and requires but little more than a Blood-warm, and, as it were, an incubating Heat, whereby to mollify and relax the Fibres of the Blood, open its Body, and cherish the Spirits.

AND so the more temperate the Body, and the more quiet the Spirits are kept, the more easily and perfectly will Concoction be perform'd.

CONCOCTION includeth two Things; namely, Extrication, and Subaction.

### *Of EXTRICATION.*

THE first Thing that Nature in the Small-Pox endeavoureth to do, is to extricate and disentangle the morbose Particles from the Blood, that they may be cast out.

THAT this may be prosperously and duly perform'd, it is absolutely requisite, that the Spirits be something appeas'd, and the disorder'd Particles of the Blood be re-instated in their usual Mixture.

IF the said Particles only hang loose in the Pores of the Lymph, then the common Circulation, Conquassation, and Percolation of the Blood, will be sufficient to perform this, without any perceivable Disorder: And so we see, it is a common Thing for the Pustles to appear, the Party not having been sensible of any Sickness, or Indisposition at all.

WHERE they are gotten not only into the Lymph, but also into the viscid and fibrous Parts; and yet not so much among the Globules as to cause any great febrile Commotion;

THEN if the Spirits be but vigorous, and not hinder'd in their Work, nor hasten'd by hot Regimen or Remedies; and withal, the oily Part of the Size be sufficient for the suppleing, lubricating, and explicating the complicated Fibres: In this Case, a kindly Ebullition arising, Extrication

cation will be compleatly perform'd in the Space of those four Days which Nature allotted for Concoction.

WHERE the Blood is so constituted, as to abound with gross strong Fibres and Size, and is of so firm a Texture, as not to be easily dissolvable, Nature will be compell'd to bestir herself strongly by way of Ebullition and Conquassation; and here will happen a pretty smart Fever to do the Work.

WHERE the Blood is too rich, and abounds impropor- tionably with Globules, they will, upon the Intrusion of variolous disagreeable Particles among them, rise into such Emotions and Combustions, as will very much hinder Nature in her first Work of Extrication, except Phlebotomy and Refrigerants bring in [their] seasonable Assistance.

IF the morbose and disproportionable Matter be not extreamly acrid and virulent, but yet remains confusedly jumbled in the Mass of Blood, and lock'd up among its Principles, it will molest, oppose and jostle the fiery vital Spirits, and thereby provoke them to fly into exorbitant Explosions; by which, the Blood being agitated violently, great Struggles, Heat and Fever will be rais'd; which acting upon the very internal Mass, will rarefy and open its Body, and knock off from it the troublesome Copula of the extraneous Corpuscles. In this Case, Extrication goeth on roughly and unkindly, and is commonly imperfectly perform'd at last.

BUT if the Matter be work'd up into an acrid corrosive Virulency, and be subtilized and divided into its minutest Atoms, and be boil'd into the inward Substance of the Blood, then the Fever which riseth upon it will work the Fibres into an Entanglement, like a Plica Polonica.

IN this Case, Extrication will go on with great Trouble, will exceed the Term allow'd for it, and often will not be accomplish'd at all, let the Phyfician do what he can, and fo the Patient dieth: Something like this, as I fup-pofe, happeneth where Petechiæ appear.

TO conclude this Subject, Extrication ought to be perform'd quietly and leifurely, and without Hurry: If it be not fo, then either a fufficient Number of variolofe Particles will not be pick'd out and gather'd together, or elfe fuch will be forc'd to Eruption, as Nature would not have put upon it.

TO this Purpose, Dr. S. faith, To me, indeed, it feems reasonable, that the longer Nature is in working, and perfecting Separation, provided the Ebullition be not quite torpid, fo much more certainly and univerfally the Separation is perform'd.

### *Of SUBACTION.*

**I**T will not be fufficient, that the variolous Particles be loofen'd and knock'd off, as 'twere from the Lymph, Globules, and other Principles of the Blood; but alfo, it will be altogether as neceffary, that by the Force and Help of an adequate Fever, together with the Operation of the Heart and Lungs, and the many Percolations, it be levi-gated as 'twere, ground and grain'd into fuch Shapes and Bulks, as will fit the Glands, and Paflages, and Pores they are to be push'd through.

WHEN fuch are separated as are not fit, the Motion of others, that are in a Way to it, will be hinder'd by their mixing together, and render'd lefs adapted for Expulfion.

BUT when, by the faid Means, the Body of the Blood being open'd, the variolous Corpufcles loofen'd, their  
virulent

virulent Copula shaken off, their Sizes and Figures fitted to the Pores, then the vital Spirits not meeting with much further Opposition, remit of their Orgasm, and so falling into their natural and proper Mication, and usual Way of Operation, come to perform their Functions quietly again as they were wont, and ought to do; and upon that, the Fever and Symptoms sink, and go off proportionably, and the liquid Mass circulating calmly, drives them out gently with the Serum and Vapours they swim in.

BUT Things do but seldom proceed thus happily and mildly; for it is a very common Thing, even in a kindly distinct Sort, for a febrile Conflict to arise, and grow sharp, the two last Days of Subaction, Nature then vigorously exerting her Forces in preparing for Expulsion.

AND in a Confluent Sort, the Fever and troublesome Symptoms are wont to go all along quite through this Stage; and it may be prognosticated, that the sooner they begin, the worse will be the Pox, and the more it will flux.

WHEN the Fever runs very high, and the Blood is foul, and such Humours and Matters are forc'd to Eruption, as are either not fitted to pass the Pores, or not agreeable to the Nature of variolous Pus, the Distemper will prove anomalous, with general Fluxing, Purple Spots, Watery Pocks and Blisters, &c.

AND it is likely, that many of those Corpuscles which cannot get Passage into the Skin, will turn back, and make the Fever more virulent, and also fall upon, and infect the Viscera and inward Parts.

CONCOCTION is not wont to proceed so evenly and uniformly as to extricate and subact every individual variolous Atom together by equal Degrees at the same Time; but some it loosens and fitteth first, and then others,

others, and so on, till all that will submit to it be successively concocted.

WHEN Nature is not hinder'd on the one Hand, nor hurry'd on the other, but is permitted to go on with her Works her own orderly Way, and leisurely Pace, she useth to perform and finish this Separation and Subaction totally and fully in the Space of four Days after the first feverish Disorder was perceiv'd.

IN some Children, and others, who are sound and healthy, and free from fermentative Humours, and fiery elastic Spirits, and in whom but a small Quantity of variolous Matter is assimilated, this Second Stage useth to be pass'd over without any remarkable Fever or Sicknefs.

*What to be Done, and Avoided.*

IN this Stage the morbose Matter must not be violently forced by hot Regimen, or Cordials; for those will be apt to cause a great Assimilation, turn it into rank Venom, and confound Concoction.

NEITHER yet on the other Side should Ebullition be, by undue Evacuations, or cold Regimen, render'd so torpid as to retard Expulsion.

AND therefore it is unadvisable to prescribe Phlebotomy, Vomits, Purges, Clysters, Sudorifics, &c. where they are not plainly indicated.

FOR by these Evacuations, (in some Patients) not only Ebullition is too much repress'd, and Concoction thereby hinder'd, but also that Matter is subtracted which should have been left to supply the Pustles afterwards with Serum and Steams.

WHENCE

WHENCE it sometimes happens, that the Small-Pox, which at first came out well, and made a laudable Progress, (and perhaps so much the better because of the said Evacuation) a little after become starved for want of Matter to follow that which went before, and therefore flatten and strike in, and never come to Perfection.

DURING this Stage, if there be Fear of a confluent Pox, and Phlebotomy be no ways contra-indicated, it may be of singular Use to moderate Assimilation, restrain Ebullition, and make Room for Eruption.

I know not whether it may not be better to open a Vein in the Foot than in the Arm; because we see the Pocks are generally apt to break out sooner, and more copiously, in the upper Region of the Body, which receives all its Blood from the *Arteria ascendens*; than in the lower, which hath its Blood from the *descendens*.

AND add to this, it is manifest that all the bad Symptoms and Mischiefs that this Distemper brings, are not in the lower Parts, but in the upper only, where the Heart, Lungs, Brain, and Functions, both Vital and Animal, are seated; and it is Matter of the highest Concern to secure these.

BUT if the Blood abounds not over-much, be not too rich in Globules, be not too thick, gross, fibrous, and fizy, and the Fever keep within moderate Bounds, I see no great Need of Phlebotomy at all; and should not judge it adviseable, for fear of weakening the Spirits, and needless disturbing of Nature, when she hath full Business upon her Hands, and is working rightly upon it.

WHEN the Stomach is foul, its Villæ being dawb'd over with Slime, or its Plicæ fill'd with either glassy Phlegm, corrupted Relicts of ill-digested Meats, or with

noxious Recrements spew'd out of the Arteries, a washing Vomit at this time will ease Nature, and take off, and prevent a vast deal of Trouble, and sick Fits.

BUT a strong one, and especially where the variolous Matter tends to pass out of the Blood into the Stomach, may do much Mischief, by pumping that Matter more plentifully into it, and thereby increasing the Sicknefs, Anxiety and Vomiting.

PURGING also may be seasonable at this time, before the morbose Steams have begun to bear outwards; provided it be done with such mild Medicines, as only cleanse the first Passages, and do neither torture the Intestines, nor attract Humours into them, nor much trouble the Blood.

AND that upon two Accounts:

1. TO carry out such Excrements as remain in the Guts, and having lain there for some time, are grown stale, corrupt, and offensive to Nature; for it is to be thought, that the Guts are not emptied quite every time one goes to Stool; but a good Quantity is always left as a Support to them; for I am of Opinion, that the Guts can as ill bear a perfect Emptiness, as the Stomach can.

2. WHEREAS in the confluent Sort, it is a usual Thing not to have a Stool from the Beginning of the Decumbiture to its Declination; whereby the Intestines are daily fill'd up, and at length becoming stretching full of old Excrements, mix'd with variolous Matter, give great Trouble to Nature, and add Venom and Violence to the second Fever.

IF a convenient Purge be given in this second Stage, so as to make Room, and not too much empty the Guts, it may prevent the Necessity of giving one afterwards  
about

about the tenth Day, or after that when Nature is struggling in the second Fever, and almost giving out.

SINCE nothing so much heats the Patient all over, or causes so great a variolous Assimilation, as perpetual lying in Bed, Dr. *Sydenham* forbids it in the Day-time, till all the Pustles are fully come out.

BUT such as are very tender and weak, and feel great Anguish, especially in cold Weather, must be suffer'd to lie in Bed; only they may turn Sides in it as often as they will, and must not be cover'd so as to be oppress'd with a great Weight of Bed Cloaths, nor have too much Fire in their Chamber.

BUT more of this afterwards.

*To know the SMALL-POX at coming out.*

UPON the third or fourth Day at furthest after the Fever hath set on in good earnest, and been continual, there appear upon the Forehead, Neck, Bosom, Back, and Flat of the Arms, round Pimples about the Bigness of Pins Heads, which standing up a little higher than the Level of the Skin, may be felt with the Finger, and are of a fair blushing Colour: But this is not to be understood of a bad confluent Sort, for that sendeth forth only little red flat Spots, like the Measles.

TULPIUS teacheth us, that in an Epidemic Season, it is usual for the Small-Pox to pitch upon, and, as 'twere, chuse some one particular Part of the Body to make its first Entrance upon, as the Face, Breast, Back, &c. and most People, during the Reign of that Sort, have them begin to come in such a determinate Part, before they are visible any where else; therefore the Physician that looketh for them, should examine such Parts first.

SOME say they most commonly break out first of all on the Back, and perhaps it may be so, where there have been violent Pains in that Part.

IT is better to look for them by clear Day-light, than by that of Candle ; better with one Candle than two.

PERHAPS a Reading Glafs, that magnifies well, may be of good Use to spy them out with, before they come to be fairly discernable to the naked Eye.

*To distinguish the SMALL-POX from other*  
AFFECTIONS.

See before,

*Flea-bites,  
Ague Spots,  
Surfeit Spots,  
Scorbutic Spots,  
Red Gum,  
Erysipelas,  
Herpes,  
Faint Purples,*

*Rash,  
Miliary Fever,  
Scarlet Fever,  
Purple Fever,  
Petechiæ, and  
Spotted Fever,  
Many Sorts of Small  
Measles,  
Little Small-Pox,  
The True Measles.*

SOMETIMES the Small-Pox flush out like an Inflammation ; but are distinguishable, forasmuch as

AN Inflammation is a Tumor in the Flesh itself, under the Skin, in some one Part only, and not all over the Body.

IT is circumscrib'd, hard, tense, shining, very red, sore, and painful, with a Pulsation.

*To know when they will prove Distinct.*

1. **I**F the Party be not over-full of Blood, be clean from ill Humours, of an healthy Constitution, of a cool Temperament, and be not apt to Fevers.

2. If a little before Infection, or during the two first Stages, the Party hath been purged, or (if it was needful) been let Blood, or bled freely at Nose, or the Menfes have happen'd lately.

3. If there be a great Propensity to sweating.

4. If it be a Child, and after its Time of Toething is past, it be taken with an Epileptic Fit, or a Looseness.

5. If the Fever and Symptoms run not high till the two last Days of Concoction.

6. If the Pustles come out on the fourth Day, large, swelling, and fair, not excessively red, be but few at first, and make their Appearance leisurely.

7. If the Fever and Symptoms abate upon Eruption.

*The* C O N F L U E N T S O R T,

**H**A T H, before Eruption, the same Symptoms in common with the Distinct; only they begin sooner, and are more severe, such as Anguish, Sicknefs, Vomiting, Pains in the Head, Back, and Limbs, Vertigo, &c.

*It is like to prove the CONFLUENT SORT.*

1. **I**F the present current Constitution run most upon that Sort.

2. **I**F the Party be a strong vigorous Man, in the Flower of his Age; be full of Blood, and of an hot Constitution, and have used to inflame himself with hard Drinking; especially if the Distemper happen in the Spring, or in very hot Weather.

3. **I**F the Illness began from a great fatiguing Journey; from a Surfeit occasion'd by immoderate Exercise, or Drinking.

4. **I**F Bleeding, Vomiting, and Purging were necessary, and have been omitted.

5. **I**F after Infection taken, he hath been, during the Stage of Assimilation and Concoction, kept hot, taken forcing Medicines, or laid in a Sweat.

6. **B**Y how much the sooner they break out before the fourth Day, generally so much the more they flux.

7. **I**F great Sickness, Anxiety, Vomiting, Head-ach, terrible shooting Pain in the Back, &c. come at the very Beginning of the Stage of Concoction, and be very exquisite and bad before the two last Days of it.

8. **I**F the Fever and Symptoms abate not remarkably upon Eruption.

9. **I**F comatose Affections seize him in the Stage of Concoction, or Eruption.

10. **I**F a Diarrhœa happen in the Stages of Concoction and Eruption in grown Persons; yet I have more than once observ'd

observ'd it to precede a contiguous Pox; but in Children it is otherwise, for in such it commonly comes before a Distinct.

11. IF the Pocks rush out apace in very small Specks, clustering together, or appear red, like an Erysipelas; or flat, like the Measles.

12. IF a Salivation arise upon Eruption, or a little after.

*The Third* S T A G E. E R U P T I O N.

I Would have it here observ'd, that tho' the Small-Pox doth really and properly begin at Assimilation, and is of eight Days standing at least when it puts out the Pustles; yet because the common way is to call that the first Day wherein they are first seen, and that manner of Account is the least liable to Mistake, I think good to comply with Custom, and keep all along to that Sort of Reckoning.

T H E variolous Matter being concocted, Nature drives it out of the Mass of Blood into the Superficies of the Body, critically, by way of Despumation.

T H I S ought to be done as fast as the Matter can be rightly extricated and subacted, and the Motion of Circulation can expel it in an orderly regular Manner, and no faster, till all that at this time should be thrust out, is evacuated.

T H E R E F O R E as it cometh out, the Fever and Symptoms, which were urgent before, ought to abate proportionably; and we may certainly conclude, that as long as there is any Remainder of them (except where improper Remedies, or wrong Treatment have been the Cause) the Blood is not sufficiently and thoroughly discharg'd, and  
freed

freed from that Matter, which should have been sent out in Pustles.

THIS Stage of Eruption begineth when that of Concoction endeth ; that is, in the distinct Sort on the fourth Day, but in the confluent usually on the third.

AND it endeth, in both Sorts, on the eighth Day.

BUT tho' the Confluent generally breaketh out on the third Day, yet Dr. S. hath seen (tho' rarely) where, by reason of some exquisite Pain, or grievous Symptom, the Spirits being molested, and put by their Work, were not able to drive out the Variolæ till the fifth Day ; but where-ever that happen'd, it most certainly foreshew'd a most terrible Flux.

*ZACUTUS LUSIT.* indeed speaks of an Eruption on the twentieth Day ; but I conceive he might be deceiv'd by this, that his Patient had fallen sick of some Fever that was not of the variolose Family ; and sixteen Days after that, the Small-Pox chanced to take him ; and so, tho' the Pustles appear'd not till the twentieth Day after the commencing of the first Fever, yet, when once the true variolose Fever was kindled, it threw them out on the fourth.

NOW tho' every Pustle that will come out at all, doth so in four Days time, and the troublesome Symptoms thereupon cease ; yet it is not to be thought that the Blood doth so wholly and compleatly discharge itself of all its Venom, and every Particle thereof, into the Skin, during this Term ; but that it retains also much which was not fit for pustulary Evacuations, which it sendeth forth afterwards in Serum and Vapours, for the Support and Ripening of the Pustles, and for the Colouring and Swelling of the Interstices, thro' the whole Course of the Disease.

IF the morbose Matter be so mingled, entangled, and inviscated in the Serum and Size, that it cannot possibly be loosen'd and fitted for the Pores of the Skin, and consequently cannot be evacuated that way; in that Case, it must run off together with the Serum, by way of Salivation; which prudent Nature hath instituted for this Purpose, and allots it Time commonly till the 10th, 11th, or 12th Day, and sometimes much longer.

BUT in Children, (because they salivate not) this Serum commonly gains its Exit, by way of Diarrhœa.

AND because, upon ceasing of Salivation, some of the virose Matter, which was not fitted to pass the salival Glands, remains yet behind, Nature attempts to drive it out by Swellings; first, of the Head and Face, and afterwards of the Hands: And if those Swellings either rise not up enough, or hold not up long enough, but quickly sink again, no more Assistance is to be hop'd, for the Sick will assuredly die.

*Of the Distinct S M A L L - P O X in the S T A G E of*  
E R U P T I O N.

IN this Sort, upon a competent Extrication and Subaction of the variolous Matter, the Rage of the vital Spirits remitting, the Ebullition of the Blood asswaging, the Fever subsiding, and all tending to Composure and Quiet, Eruption is not precipitated and forced to begin, till all the Matter be, if not actually and in every Part prepar'd, yet in the Way to it; and then it is perform'd so plenarily and placidly, that the Party thinks himself at ease, pretty well, and hearty.

AT first, small, reddish, blush-colour'd Pimples (but not flat Spots) break out in the Face, Neck, Breasts, Back, and Arms, afterwards all the Body over.

IF they come leifurely, and appear fair, and withal, the Sick grow better upon it, we are in no wife to be over-officious, to interrupt Nature, but permit her to go on quietly with her Work, her own Way and Pace.

DR. S. would not have fuch a Patient put to Bed for good and all, till Eruption be fully compleated. But more of this by itfelf anon.

WE muft be follicitoufly careful at this Time, that on the one Hand, Ebullition be not too much diminifh'd and made torpid by Bleeding, Vomiting, Purging, &c. where they are not neceffary.

AND on the other, that it be not raifed up too high by hot Remedies, or Regimen efpecially, if the Patient be in the Flower of his Age, or have inflam'd his Blood; or it be in the Spring, or when the Weather is fultry hot.

SUCH a Degree of Heat as is agreeable to the Temper of the flefhy Parts, and ufed to be natural and customary in Time of Health, is moft proper to promote Concoction and Expulfion.

BUT it will not be enough to preferve a due Temper of the Blood, but (as I apprehend) it will alfo be highly requifite, to keep the Ballance even, fo that the Current of the Blood into the upper Parts, thro' the Arteria afcendens, may be proportionable (neither flow, nor fafter) than that into the lower, by the Arteria defcendens.

FOR it is a common Thing for the Small-Pox to come out a Day or two later in the lower than in the upper Parts of the Body: And if they could be haften'd in the lower, it is likely they would by that Means be both fewer, and more benign in the upper.

FOR this Purpose, opening the Saphena may be proposed: See what the *Arabians* say of Bathing; and also what the Moderns have advis'd, concerning bathing the Feet in warm Milk: *Baglivi* orders Spunges soak'd in warm emollient Decoctions to be apply'd to the Soles of the Feet. I have known where Sand was heated in a Frying-Pan, and put into a Bag, and laid hot into the Bed, for the Feet to touch and bear upon; but this must not be done so as to put the Body into an Heat or Sweat.

RUBEFYING Cataplasms bound round the Ancles (where they will operate much sooner, and more powerfully than on the Soles) may be thought of.

℞ *Rad. Raph. silv.* ʒij. *Sem. Sinap. Fimi Columb.* aa. ʒj.  
*Flor. Cerevis.* q. s. f. Catapl.

THESE will excite Pain, and therefore cannot be endur'd on long at a Time, but may be renew'd as often as shall be judg'd expedient. They will attract sooner, and more strongly than Epispastics, and will not sharpen the Serum so much as Cantharides do.

WHAT if Cotton Stockens were worn constantly Night and Day during this Stage, and then left off again as soon as the Pustles are all come out.

DR. S. saith, as soon as the Signs of the Small-Pox shew themselves, I keep the Sick from the open Air, and forbid them the Use of Wine and Flesh, and allow them Small-beer warm'd with a Toast, for ordinary Drink, and permit them to drink as much as they will.

I order them for Diet, Oatmeal and Barley-Gruel, and Roasted Apples, and other Things which are neither too hot, nor too cold, nor of an hard Digestion, nor laxative.

I forthwith prohibit an hot Regimen, and all Manner of Cordials, by which some rashly endeavour to force out the Small-Pox before the fourth Day ; which is the natural and proper Day for Eruption.

FOR I certainly know, that the slower they come out, the more universal will be the Separation of the Matter, and the better will the Pustles ripen, and the less Danger will there be of their striking in.

WHEREAS, if they be driven out before their due Time, the Matter being as yet crude and undigested, is precipitated, and deceiveth our Hopes, and, like over-hasty Fruit, will never answer.

AND besides, there is great Danger, by this over Diligence, (especially in florid, and hot Constitutions, whose active Principles do more than enough supply the Use of Cordials) lest Nature being much incited and forc'd should over-run the whole Body with the Small-Pox ; and that by this over Haste they should flux, which otherwise would have been a moderate Distinct Pox.

MOREOVER, the Pocks must not be immediately forc'd out as soon as any Suspicion of the Disease ariseth, tho' the Patient be very sick before the coming out.

FOR there cannot be so much as one Instance given of any that miscarry'd, because the Small-Pox came not out apace at first ; but too many have perish'd, in whom the Small-Pox appear'd well enough at the Beginning, but struck in afterwards, before they arriv'd to Maturation.

HE saith, I have more than once observ'd in young Persons of a sanguine Complexion, that a hot Regimen, and Cordials given to drive the Pocks out before their due Time, have so little promoted their coming out, that they have given a Stop to it.

FOR

FOR the Blood being heated by these Means, and put into a more violent Motion than is fit to perform rightly the Separation of the variolous Matter, only some Tokens of the Disease shew themselves, while the Pustles lie within the Skin, and do not rise any further, by what Cordials soever they are sollicitated to it, till at length, the Blood being reduced to a moderate and due Temper, (that is, by allowing of Small-beer, and taking off part of the Bed-Cloaths, wherewith he was roasted) I have made a convenient Way for the Pustles to pass out; and so I have set the Patient out of Danger.

I would not that a Cordial should be given before the fourth Day, though there be a Looseness that may seem to indicate it.

FOR though a Looseness doth sometimes precede the Eruption, which is occasioned by inflammatory Vapours, or Humours emptied into the Intestines from the Mass of Blood enraged, and violently hurried the first Days; yet Nature will be no more wanting in expelling the Vapour of the pocky Matter (which being done, the Looseness stops of its own accord) than she is wont to be in ejecting those Vapours, which at the Beginning of the Disease inverted the Stomach, and caused Vomiting.

BUT if the Patient be a strong young Man, who hath besides heighten'd the Disease by excessive Drinking, it will not be sufficient for the restraining of the Ebullition of the Blood, that he abstain from Bed, and from Cordials, unless moreover, he be let Blood.

IF notwithstanding Bleeding, the Spirits fly into Disorders, and the Fever riseth too high, Refrigerants and Paregorics must be diligently insisted on, such as *Sal. Prunel. Ol. Vitrioli. Tinct. Rosar. Decoct. Lusitan.* and, in the Time of Year, the following Cydoniate.

℞ *Cydon.*

*Rx Cydon. radulâ ras. ℥iiij. Aq. font. lbj. stent simul in frigido hor. j. deinde Liqueur fortiter express. Edulc. cum Sacch. depur. ℥℞. vel q. s.*

THE last Day of this Stage, if the Fever run not high, and yet some of the first Symptoms hang a little on, we may give the following, or something like it, to throw out, before the Time be quite past, all the Remainder of the variolous Matter yet in the Blood, which Nature hath prepar'd for Eruption.

*Rx Aq. Cinnam. bord. ℥ij. Diascord. 3j. Syr. de Mecon. 3vj. m. f. Haust.*

### Of Lying in BED.

THAT there is (commonly speaking) no absolute Necessity of keeping the Sick hot upon Eruption, appeareth from this, that it hath been usually practised to carry Persons on Horseback many Miles, even in pretty cold Weather, when the Pocks were actually coming out upon them, and no Harm hath follow'd upon it.

THIS (as I judge) hath succeeded best, where it was likely that too great a Quantity of Matter would be assimilated, and the Distemper would prove Confluent; yet all must not be treated alike, for some are so very sick and faint, that they cannot bear to sit up.

BUT it is the general Way to lay the Sick in Bed, as soon as ever the Pimples are discover'd, and to confine them to it all the whole Time of the Distemper; and truly, provided due Care be taken, that no more Bed-cloaths be laid on than can be easily born, without over-burthening and heating the Sick, lying in Bed may be upon several Accounts beneficial.

1. IT keeps the Sick to a more equal Warmth all his Body over, than can be had when he is up in his wearing Cloaths, some Parts being then more expos'd to Air than others.

AND that will not only cherish the Spirits, but also preserve the Tone of the Habit of the Body; and without that, Expulsion, which much depends upon the Pliantness, due Tension, and Spring of the cutaneous Fibres, cannot be well perform'd.

2. IN the Posture of lying along, the Blood is thrown about more easily and equally, than in an Upright; for the same Force is employ'd to drive the Blood out of the Heart thro' the Arteria Ascendens and Descends; and then the great Torrents of the Blood-Vessels being situated horizontally give a more commodious and even Current thro' them, than they can where they make Ascents and Descents.

IN Bed, the Body lieth easy, and at Rest, without the Want of the Action of the Muscles to keep it upright, and manage the Operation of the Limbs; and so the animal Spirits having little to do for the Body, (except in the Business of spontaneous Motions) keep themselves up in Vigour free from Weariness and Wasting.

NOW, the animal Spirits in a living, waking, and moving Animal have a great deal more to do, than any one, who hath not closely consider'd this Matter, can think.

FOR the setting of this in the more open Light, I'll transcribe a Passage or two out of Dr. Grew's *Cosmologia*.

No less than forty or fifty Muscles (besides all other subservient Parts) go to execute that one Act of Laughter.

WE cannot, in some Cases, execute a single Thought without this Retinue.

FOR, suppose one sitting in a Room, has only a mind to look at something out of a Window :

BESIDES the Nerves, by which the Order is sent to all the officiating Parts, the Bones, as Under-Servants, with the Muscles of the Belly and Legs, are employ'd to raise him up; those of the Legs, Belly and Back, to keep him upright; those of the Breast, Arms and Hands, to open the Casement; those of the Neck, to turn the Head; and those of the Eyes, to pitch them on the Object: In all, seventy or eighty wait upon that one single Thought. Thus much of the Business of the animal Spirits.

IF the Pocks be but few, and it be Summer-time, Dr. S. saith, he sees no Reason why the Patient should be kept stifled up in Bed; and why he may not rather rise a few Hours every Day, provided the Inconveniencies of too much Cold and Heat be avoided.

FOR when he keeps up sometimes from his Bed, the Disease runs its Course with less Trouble, and in a shorter Time, than if he had continually been fasten'd down to it; which also not only makes the Sickneſs more tedious, but also increases the febrile Heat; and when the Puſtles grow up, causes a painful Inflammation.

BUT if either the cold Season of the Year, or large Eruption of the Puſtles, put the Patient under a Necessity of keeping his Bed constantly, Care is to be taken, that he lie not hotter, nor with more Cloaths than he can bear with Ease; and that he have a Fire kindled in his Chamber only Mornings and Evenings, unless it be sharp cold Weather.

*Of the Confluent SMALL-POX in the Stage of*  
ERUPTION.

**I**N this Sort, the Vital Spirits being vehemently exasperated, and grown quite furious, do mightily expand themselves, and exagitate the Blood.

AND the Globules running into extraordinary Heats and Ebullitions, do as 'twere calcine the variolous Matter, and give it a Degree of Causticity, and then boil it into the internal Substance of the Mass.

IN this perturbed State of Things, the Works of Ex-trication and Subaction can go on but slowly, and will be but imperfectly perform'd at last.

FOR when some of the peccant Particles are loosen'd, others at the same time being involv'd, and set fast in the Size, cannot be fetch'd out during the Term allotted for it.

AND the Vessels being all full swell'd with boiling rasy'd Blood, and that Blood being forcibly and rapidly hurry'd and impell'd, Nature is thereby pushed; and being not able to tarry till universal Concoction can be accomplish'd, begins to free herself, by throwing out such Matter as she finds then ready before the regular and due Time; namely, on the third Day: And because the Eruption is but partial, the Symptoms go not off upon it, as they do in the distinct Sort.

AND further, because a vast Quantity of variolous Matter is generated and assimilated, and also the Affair of Expulsion is exceedingly urgent, innumerable Numbers of Corpuscles will be driven out thro' the near-touching, and perhaps thro' the very same Pores.

AND therefore the emitted Particles rise not up into single distinct pustulary Heads, but flow into one another, especially in the Face, which they cause to swell sooner than the other Parts.

AND lastly, in a fatal confluent Sort it sometimes happens, that the Fire of the Fever sublimeth and exalteth the Venenosity of the morbose Matter to a very great Degree, and rendreth it volatile, acrid, and corrosive; and the Particles of it seizing upon the vital Spirits, concrete with them into such Moleculæ, as are unfit to pass the Pores regularly; whereupon, if they tend inwards, they cause pocky Pustles upon the internal Viscera; or if they come out, produce Petechiæ, Vesications, or Sphacelations.

BUT in a milder Sort of Small-Pox, tho' there may be a great deal of morbose Matter assimilated, yet, if it can but be so brought to pass, that the greatest Part of it be concocted and expelled before the time design'd for Eruption (which is the fourth Day after they begin to appear) be quite past, then Nature will be able to help herself, and deal some other way with what remaineth yet behind; and thereby the Distemper will prove of the contiguous Sort, and not of the truly confluent.

AND when it so happens, that much of the Matter cannot possibly be duly concocted and expelled within the Space of four Days after Eruption began, Nature usually will carry it off sometimes (tho' not often) by Diarrhœa; but mostly by Salivation at first, and Tumefaction afterwards.

SINCE the confluent Small-Pox is the Product of a great Inflammation in the Blood, Care must be taken that the Patient be not heated.

BUT

BUT tho' it requires greater cooling than the distinct doth, yet the Patient, by reason of painful Exulcerations, cannot keep out of his Bed.

AND it is expedient, for the promoting the Swellings of the Face and Hands, and the Rising and Increase of the Pustles, that he keep his Hands, as well as his Body, in it; so that he have not upon him too many Cloaths, and have the Liberty of turning himself Night and Day frequently, that the great Heat may be qualify'd, and Sweats prevented.

*Of the* ERUPTIONS.

1. **W**HEN the Pocks come out leisurely, are blush-colour'd, large, a little rais'd, and stand single, and are not very many, they are from a benign Matter, well separated, and expell'd.

2. **W**HEN they come out very small and numerously, and the Symptoms abate not proportionably to the Eruption, and the Fever continueth, we are to judge, that the morbose Matter is very sharp, is not easily concocted, hath broken in among Part of the Globules, and disorder'd the Compages of the Blood.

3. **W**HEN they are very many, and yet do but only almost touch, and not quite join, and flow in together, we are to understand, that in this Case, tho' a great Quantity of Matter be assimilated, and the Ebullition forced much out, yet it is not of the most virulent Sort, and every Corpuscle hath a Pore to itself to fly out at, and so each of them make a distinct single Pustle. This is what is call'd a contiguous Small-Pox.

4. WHEN the Eruptions are small, infinitely numerous, confluent, flat, rush out apace, and cluster like an Erysipelas, it plainly appears, that there hath been a great Quantity of Matter generated, that it is exalted to an high Degree of Venenosity, and that the rapid Course of the boiling Blood hath stretch'd and widen'd the Bore of the Passages, and forced out the variolous Corpuscles, not only through the contiguous, but a great deal of it thro' the very same Pores, and so caused those which come out of the same Pipe to flow in together.

5. WHEN there flusheth out a Scarlet Colour all over the Body, together with petechial, purple, black, or blue Spots, we may confidently pronounce, that the whole Compages of the Blood is dissolv'd, the Globules universally throughout the whole Mass are broken, the vital Spirits destroy'd, Hæmorrhages are at Hand, and Death is at the Door.

*Of SYMPTOMS during the STAGE of ERUPTION.*

*Of SICKNESS, ANXIETY, and FAINTING.*

IF these happen from mere Emptiness, the Sick must be frequently refresh'd and supported, with such Sustenance as is allowable in Fevers.

BUT these are generally caus'd by Nature's calling away those Spirits, which were stationary in the Stomach, to assist in the Work of concocting the variolous Matter in the Blood.

AND if one should call them back again into the Part at this Time by generous warm Medicines, we should thwart Nature, and hinder her Design.

WHERE-

WHEREFORE unless the Sick be weak-hearted and timorous, and fall into cold Sweats, and downright fainting Fits, it will be best to do nothing at all, but expect a while till the Spirits may be permitted to return to their former Stations.

BUT when unsupportable Anguish and Fainting happens, and upon those Accounts Cordials are absolutely necessary, let the Sick lie quiet in Bed, and take temperate Cordials: Here perhaps a Glass of mull'd Sack may give Relief.

BUT as soon as ever it is perceiv'd, that the Spirits come, and the Pulse beats up again, all Cordials must be entirely left off, for fear lest they flush up the Fever too high, and the Work of Concoction and Expulsion be confounded.

BUT if the Sick be a Woman, and she fall into Hysterick, and not properly Stomachic fainting Fits, she must be reliev'd with Spirit of Hartshorn dropt into black Cherry Water, or by the following Pills.

℞ *Castor.* ʒij. *Sal. Succini.* ʒj. *Sal. CC.* *Camph.* ʒaa. ʒss.  
*Diascord.* q. s. *Pil mediocres.*

SHE may smell to *Affa fæt.* or have it cast upon burning Coals, and take the Smoak of it into her by Inspiration.

### Of NAUSEOUSNESS and VOMITING.

SEE before of Emetics.

WHEN these are caus'd, not by any Fault of Foulness of the Stomach itself, but by variolous Matter brought into

## Of the SMALL-P O X.

into it by the Arteries out of the Blood, they must not be further provok'd by Emetics, but restrain'd and stopp'd.

To this Purpose, let him lie in Bed quiet, and pretty warm ; let him forbear Beer, and drink Sack Whey.

℞ *Pulv. è chel. Comp.* ʒj. *Rad. Contray. gr.* ij. *Mithrid.* ʒ℞. *m. f. Bol.* Let this be given once, or oftner, according as the Physician shall judge necessary, to drive outwards, and promote Perspiration.

PAREGORICS are of principal Use here, together with Anti-emetics.

℞ *Sal. Absint.* ʒj. *Succ. Limon.* ʒvj. *Aq. Cinnam.* ten. ʒj℞. *Syr. de Mecon.* ʒ℞. *m. f. haust.*

℞ *Aq. Ment.* ʒvj. *Cinnam.* ten. ʒiiij. *Absint. Comp. Syr.* *Caryoph. aa.* ʒj. *Spir. Lavend. C* ʒj. *m. f. Julap. de quo cap.* *Cochl.* iij. *ad libitum, urgente Nauseâ.*

## Of Profuse SWEATING.

DR. S. accounteth this to be a Matter of very dangerous Consequence.

It is to be restrain'd, by letting the Party rise sometimes out of Bed, by lightning the Bed-Cloaths, by opening the Curtains and letting in Air, but not so as to blow upon the Sick ; by granting Leave to turn frequently in Bed : But as to removing from one Side of the Bed to the other often Night and Day, as Dr. S. adviseth, I should be something cautious about it, especially if the Sick be of a tender Constitution, and the Weather be not hot. The Bed ought not to be so soft as to let him sink deep into it, and therefore it may be well to lay a stiff Blanket under the lower Sheet.

DR. S. speaks of enormous colliquative Sweatings in the distinct Sort, which stopping all of a sudden, without Power of Revocation, at the End of the Stage of Eruption, are certainly and suddenly mortal. But this Case I never yet met with.

*Of several great and violent SYMPTOMS.*

**I**F the Party be a strong vigorous young Man, and hath disorder'd his Spirits and heated his Blood with *Bacchus* or *Venus*, or any violent Exercise, and hath insupportable Anguish, intense Fever, enormous Vomiting, Vertigo, Rheumatic Pains in his Limbs, vehement Head-ach and Back-ach, or the like great and grievous Symptoms:

IN this Case, lying in Bed will increase them; and yet by reason of his great Sickness, he cannot possibly endure to be out of it, unless he be otherwise reliev'd.

THE Ways that Dr. S. mentioneth to help him in such a sad Condition, are, first, to bleed him in the Arm, and after some time to give an eradicating Vomit of Infusion of Crocus Metallorum, or the like. And he saith, that after the working of the Vomit, the Patient is commonly so refresh'd, that he can abstain from Bed very well.

BUT as to my Part, I have some Suspicion of this strong Vomiting (as I have before said under the Head of *Emetics*); but notwithstanding, if certain and undoubted Experience prove it to be good Practice, I shall say nothing against Matter of Fact.

IF these outrageous Symptoms arise not till a Day or two before Eruption, I take them to be merely the Workings of that Fever, which is absolutely necessary for Sub-action;

*Of the S M A L L - P O X.*

action ; and in that Case, I take Bleeding and Vomiting to be unnecessary, if not hurtful.

A L S O Dr. S. giveth Spirit of Vitriol in Small Beer, as often as it is call'd for, and keepeth the Sick to it till all the Pustles be come out.

B U T if the Party be a Child, and hath not such cruel Symptoms, he forbeareth the Evacuations, and Spirit of Vitriol.

*Of the F I R S T F E V E R.*

**T**H E first Fever beginneth with the Stage of Concoction, and endeth in a distinct regular Sort, when that of Eruption is compleated, namely, the fourth Day ; but in the confluent it continueth commonly longer.

B U T the second Fever beginneth with the Stage of Maturation, namely, on the ninth Day, and never happeneth in the distinct Small-Pox.

W H E R E there is but little morbose Matter assimilated, Nature hath no need to raise up any great Fever to concoct or expel it.

B U T it is absolutely necessary, that the Fever and Ebullition be rais'd up and continu'd in such a Manner and Degree, as is requisite for the performing of the said Operations. And therefore,

I F it rise not high enough, or if, after it was once begun, it flag, and the Heat and Pulse keep not up to a due Pitch, all Evacuations and Paregorics are to be forborn : The Sick must keep his Bed, and be cover'd warm, and may have a Bedfellow to recal natural Heat, and should be comforted with Cordials.

*Rx Vin.*

℞ *Vin. Canar.* ʒij. *Tinct. Croc.* (*Aq. Theriac. extract.*)  
*Aq. Epidem. aa.* ʒij. *Mithrid.* ʒ℥. *Succ. Cherm.* ʒj. *m. f.*  
*haust.*

BUT as soon as ever it is perceiv'd that the Pulse and Fever return, the Cordials must be immediately left off, till there be a plain Occasion for them again. The due Observance of this being a Matter of the last Concern, I think it's not amiss to give it here in Charge, tho' I have spoke of it before.

IF the Fever, upon the first, or second Day of its Onset, run high, a Glister may be of good Use to ease the Intestines, when they are full and foul, and so take off some of Nature's Grievances.

BUT I would have it timely enough ; for if it should happen to be administred just upon Eruption, or but little before it, it may be likely something to check Eruption ; and if then the Sick chance to die at last, the Physician's Reputation will be prejudic'd thereby.

PHLEBOTOMY also is here needful, and should be order'd (if it so can be) before Eruption ; but sometimes, where there is a great Fulness of hot boiling Blood, and the Fever with its Symptoms are outrageously high, Bleeding will be absolutely necessary, even at that time, to help forward Eruption, which could not proceed, by reason of the thronging Plethora, and confus'd Ebullition.

IF the Fever be, for the first and second Day of the Stage of Concoction, but little and moderate ; but then about the third or fourth Day of the said Stage, riseth up (of itself) to a great Height, causing burning Heat, Thirst, Anxiety, Watching, Vertigo, and even Convulsions, which were not before that time ; the Physician ought not to check them by Bleeding or Purging ; for

these are Signs of the Vigour of the Spirits, and are effected by Nature's rising up with Power and Force, to oppose and drive out the hostile Matter; which (if she be not hinder'd) she doth so intirely and effectively, that there generally ensues, after such a Combat, a regular, mild, and distinct Small-Pox.

BUT for the most Part, it is neither creditable nor safe to tamper too boldly in the Management of the first Fever; and if it doth not fly into Extremities, it will be most adviseable to permit Nature to do her Work, in her own Way, and in her own Time.

AND where it comes to be necessary to put an helping Hand, we must do it with Judgment and discreet Wariness; and (if possible) with the Consent and Approbation of the Friends and Nurses.

### *The HEAD ill-affected.*

IF the Head be very hot, and aketh much, and the Sick can get no Sleep, Pigeons put to the Feet, or rubefying Cataplasms, also opening of the Saphena, may be serviceable; forasmuch as in this Case, the inferior Circle of the Blood is not proportionably swift to the superior; and the *εοπη* of the boiling variolous Blood to the Head is the Cause of these Affections. Concerning this see before under the Head of *Eruption*.

BAGLIVI ordereth Cupping, with Scarification, upon the Shoulder Blades; and saith there follows present Revulsion of the raging Blood, and thereby the Symptoms are nipped off in the Bud.

*PAINS of the BACK and LIMBS.*

**T**HESSE are not only from fervent rarefy'd Blood distending the Vessels and muscular carnous Fibres, but chiefly from variolous, sharp, pricking Particles sent into the nervous Parts, which stinging, tearing, and stretching the nervous Fibres and Membranes beyond their natural Tone, and driving the Animal Spirits into Explofions, excite the Sense of shooting Pains.

IF they become so intolerably vehement that they must needs be alleviated, cool Regimen, keeping out of Bed, Bleeding, and Paregorics may be try'd; but commonly they will by no means go off till their Time.

FOR as soon as Extrication is made, the irritating Matter will be suck'd into the common sanguineous Channel, and there expell'd into the Pustles; and upon this all the Pains intirely cease.

*CONVULSIONS.*

**I**N Children they foreshew that Eruption is just at Hand, and that it will prove a very benign Small-Pox.

IN grown Persons, these before and in Eruption, may look with something of a frightful Aspect, and are really and truly very terrible and dangerous in time of the second Fever; yet here they portend no ill; forasmuch as they are nothing but the Efforts of Nature rising up strongly, and prevailing against the hostile Particles, in order to expel them; and so as Eruption goeth on, they proportionably go off.

IF they grow quite insufferable, perhaps they may be something mitigated by keeping out of Bed, and temperate Juleps: But at this Time, I think, Paregorics, which repress the Vigour of the Spirits, are not convenient; and Anti-epileptics will be of no Effect: As for Bleeding and Epispastics, I utterly dislike them.

### Of DULNESS, STUPOR, SLEEPINESS, &c.

IF, when these Symptoms come on, there be few or no Pains, except in the Head, it is a Sign that the various Venom hath seiz'd upon the Animal Spirits, and struck them down, and effectually deprives them of Vigour and Vitality; and is so very much superior to Nature, that the Case is dreadfully dangerous.

Avoid all Evacuations, except that by Epispastics, which are in this Case absolutely necessary; and Blistering of the Head I look upon as better than of any other Part.

APPLY round his Ancles rubefying Cataplasms, before describ'd.

LET the Patient be kept warm in Bed; give of the most generous Cordials and Alexipharmacs, volatile Salts and Spirits.

℞ *Aq. Ceras. nig. Rutæ aa. ʒiiij. Aq. Pæon. C. Bryon. C. aa. ʒj℞. Aq. Regin. Hungar. ʒj. m.*

*Cum hujus Mist. cochl. iiij. detur cochl. j. seq. tertiâ quâq; horâ.*

℞ *Syr. Simpl. ʒiiij℞. Sp. Lavend. Comp. & Sp. Sal. Armon. aa. ʒij. m.*

*Vel R Castor. ʒij. Sal. Succini ʒj. Sal. CC. Camph. aa. ʒʒ. Ol. Rorism. gt. ij. Mellis q. s. f. Pil. vj. è singulis, scrupulis Cap. iij. tertiâ quâq. horâ.*

*R Pulv. è chel. C. ʒʒ. Lap. Contray. gr. v. Sal. Succini Sal. CC. aa. gr. ij. Camph. gr. j. m f. pulv. pro. j. Dosi.*

### Of a DIARRHOEA in Children.

**I**N those that have the distinct Small-Pox, Evacuation enough is made by the Pustles to clear the Blood of the morbose Matter, and therefore that by Stool is not wanted, and ought to be stopp'd.

BUT in the Confluent, a Diarrhœa is what Nature appointeth for the carrying off part of the morbose Matter, which being in great Quantity, cannot be all sent into the Pustles; and it answereth to Salivation in Adults.

THEREFORE Dr. S. medleth not with such a Looseness, but co-operating with Nature, proceeds as he began; and adviseth to lay Children sometimes in the Cradle, sometimes to take them up; and if they be weaned, he orders them the same Diet he did for Adults.

### Of a DIARRHOEA in grown Persons.

**I**F it happen two or three Days before Eruption, and be moderate and well borne, and stop again as the Pocks break out, it will lighten Nature of some of its Burthen, and be beneficial, and therefore must in no wise be checked.

BUT if it continue, and seem to hinder Eruption; or if it come afterwards in any of the latter Stages, it must of Necessity be stopped.

BUT

BUT to treat of Diarrhœa's more particularly, I observe two Sorts of them, which ought to be heedfully distinguish'd in Practice.

THE one proceeds not from a variolous Cause, but from a Load of Excrements, which having been detain'd in the Intestines till stale and offensive, Nature endeavours to throw off.

IF it come towards the beginning of the Fever, before the variolous Matter could be extricated and sharpen'd, and be attended with much Wind and Gripes, and the Stools be very large, stercoraceous, and foetid, it may be judg'd to be this first Sort.

HERE the Nurses and vulgar Practicers, who are intent upon nothing but Expulsion of the Pocks, whether it be time or not, look upon it as a most dangerous frightful Accident; and let it be an Infant, or Adult, a distinct, or fluxing Pock, make no Difference, but lay about them like People out of their Wits, with all their Posse of Receipts, and will in no wise be satisfy'd till they have stopp'd it, and lock'd up the Wolf in the Fold among the Sheep, which ought to have been driven out.

TO this Purpose may be given *Pul. Rhab. ʒ℥. & Ol. Anisi. gt. j.* by no means forgetting a Paregoric after its Operation.

YET if a Diarrhœa happen to such whose Bodies are foul and full of Humours; if it be not very violent, and be well borne, and it come before Extrication have proceeded very far; in these Cases, tho' it continue till a Day after Eruption begun, yet it seems so far from being hurtful, that it is really beneficial; and Dr. S. alloweth not so much as a Cordial to stop it before its Time.

AND

AND if it be found, by the Manner of Extrication, and Matter of Excrements, that there is more behind, which must be brought away, let him, before Eruption is begun, purge with Rhubarb, as before, and quiet all again with the Paregoric.

BUT if the Diarrhœa be violent, be like to leave the Intestines almost empty of Excrements, be attended with sharp Gripes, and the Patient beareth them not well, but manifestly sinks under it, and especially if it continue till the second Day of Eruption; in these Cases, the Physician must use his Endeavours to stop it forthwith, and insist upon Cordials, Astringents, and Paregorics, and must forbid Beer, and order the white Decoction for ordinary Drink.

*Of the* VARIOLOUS DIARRHOEA.

THIS is of a different Original and Nature from the other, being caus'd by inflammatory Humours, and variolous Vapours, which it being now towards the Time of Expulsion, Nature had partly extricated, and design'd to have thrown out into the Habit of the Body; but the Blood being too much agitated, and the Spirits irritated, she is put by her Intention, and drives them off where she can into the Intestines.

It is known chiefly by the Time of its coming; for it scarce ever happens at the first setting on of the Fever, before Extrication is pretty well advanc'd, but then, when Expulsion is at Hand.

ALSO, I think it is not usually accompany'd with Gripes; and upon its Appearance (unless where it is very violent) the Sick commonly thinketh himself something easier,

easier, because some of the morbose Matter is thereby carry'd off from the Blood.

It must of Necessity be stopp'd as soon as possible, otherwise it will put by Eruption, or at least hinder it very much.

MEDICINES for this Use are ;

1. SUCH as dilute, correct, and imbibe the acrid Serum, and bring a pleasing Refrigerium to the Viscera ; Milk boil'd with a triple Proportion of Water, *Decoct. alb.* for constant Drink, for Beer must be wholly avoided.

℞ *Decoct. alb.* (per subsidentiam à pulvere liberati) lbij.  
*Amygd. dulc. excort.* ʒij. *Sacch. alb.* ʒj. f. *Emuls. a.*

2. SUCH as appease the Fury of the Spirits, and Rapidity of the Blood. These are Paregorics.

℞ *Aq. Cinnam. ten.* ʒij. *Syr. de Mecon.* ʒvj. *Pulv. Terr. Japon.* ʒi. m. f. *Haust.*

3. SUCH as drive gently the morbose Matter into the Habit of the Body, and at the same time heat not the Blood : Temperate Cordials and Sudorifics have Place here, such as *Pulv. è chel. Comp.* and for this Purpose it will be necessary that the Sick keep wholly a Bed, but not lie too hot.

4. SUCH as being rough and austere, have Power to constringe the Fibres, and purse up the Mouths of the Vessels that open into the Intestines.

℞ *Pulv. è chel. C.* ʒi. *Terr. Japon.* gr. viij. *spec. Diamb.* gr. ij. f. *Pul. qui cum Succ. Cherm. q. s. Cogatur in Bolum.*

℞ *Aq. Cinnam. ten.* ʒvj. *Aq. Cinnam. fort.* *Syr. Cydon.* aa. ʒj. m. f. *Fulap.*

℞ *Cydon.*

℞ *Cydon. radulâ ras. ʒviij. Aq. font. lbij. stent simul per hor. col. fortiter express. adde Syr. è Rubo Idæo ʒiiij. m. pro potu ordin.*

℞ *Decoct. alb. (subsido claresacti) lbj. Conserv. Ros. rub. ʒij. coq. ad ʒxij. col. adde Vin. Canar. Aq. Cinnam. fort. aa. ʒij. m.*

℞ *Ter. Japon. ʒij. Bol. Arm. Pulv. ʒj. coq. in Aq. font. lbij. ad ij. sub finem add. Conf. Ros. rub. ʒiiij. Col. (à pul. crassiori subsido liberat.) adde Aq. Cinnam. fort. ʒij. m.*

℞ *Radi Torment. (vel Bistortæ, vel Cortic. Granat.) ʒj. Ter. Japon. ʒij. coq. in Aq. font. lbij. ad lbij. sub finem add. Diascord. ʒss. col. add. Aq. Epidem. ʒij. Syr. è Ros. sicc. ʒiiij. m.*

### Of BLEEDING at NOSE.

**T**HIS is to be distinguish'd from the Bleeding Small-Pox, by the Signs hereafter to be spoken of.

IF the Hæmorrhage happen before Eruption, or even in the Beginning of it; if the Party be a young Man or Woman, full of Blood, and of an hot Constitution, and the Flux be not immoderate, it usually is for Good, and supplieth the Omission of Phlebotomy.

IT may take down the Orgasm of the Spirits, assuage the Ebullition of the Blood, help the Head and Lungs, and make Room for the thronging Pocks to issue out easily.

A Doctor of Physic told me, he fell sick when a Student at Oxford, in a Time when the Small-Pox was epidemic there, had the usual Symptoms of cruel Pain in the

R r

Head

Head and Back, together with a Delirium, came out full of Pustles, which his Physician pronounc'd to be the Small-Pox.

THEN he fell a Bleeding at his Nose so profusely, as to lose at least two Pounds of Blood by Estimation. Upon this his Fever, Delirium, Pains, and all other Illness went off together; the Pustles all vanish'd; he slept soundly; and from that Time (which was above 30 Years ago) he grew well, and never had the Small-Pox since.

WHEREFORE, if the Hæmorrhage keep within moderate Bounds, and hath no apparent ill Effect, it is not rashly to be restrain'd; but when it is necessary to do it, the Things to be mention'd by and by under the Head of *Menses* may be useful.

WHEN the Blood is extremely over-heated, and boil-eth and rarefieth, and is ready to burst the tender Vessels, and run out, where-ever it can make its Way, the following perhaps may be ventur'd upon.

℞ *Herb. Plantag. contus. ʒj. Aq. font. lbj. stent. simul in frigido per hor. ʒ. Col. express. adde Ol. Vitrioli q. s. ad aptam aciditatem; deinde repon. donec Sedimento præcipitato, liquor evaserit clarus. Hujus cochl. vj. propinentur; & quotiès opus fuerit repetantur.*

BUT in giving this, or the like very cold Medicines, the Physician must diligently attend, and nicely observe what Effect they have; for though he ought to restrain and qualify the Fire, yet he must take special Care not to put it quite out.

WHERE the Fever runneth not high, hot Bricks or Sand Bags put to the Feet, may, by quickening of Circulation in the lower Province of the Body, make Re-  
vulsion

vulsion from the upper, and thereby put a Stop to the Hæmorrhage.

TENTS cut out of the Fungus, call'd *Crepitus Lupi*, dipp'd in Vinegar, then roll'd in powder'd Bole, may be put up the Nose, to constringe the Mouths of the Vessels.

A dry'd Toad bruis'd, sew'd up in a Silk Bag, and hung about the Neck, may be try'd. With this I succour'd a Girl of about eight Years of Age, upon whom the Measles had come out fairly at first, but upon a profuse Bleeding at Nose they turn'd black, and then struck in again: Perhaps the Horror of so foul and ugly a Thing in her Bosom might work this Effect, by putting the Spirits to flight, and depressing their Impetus; or (as *Helmont* would express it) by terrifying the Archæus.

SOME would have Saphire or Blood Stones hung down from the Neck; but for my own Part, I cannot put much Trust in Things to which such occult and marvellous Qualities are ascrib'd by the Vulgar, as I can have no manner of Conception how they operate.

### Of the MENSES.

IF they break down at or near the accustom'd Time of the Month, flow not too rapidly nor plentifully, hold not on longer than they us'd to do, and, above all, the Sick bear it well, without any Failing; in these Cases no Stop must be put to them, but it must be left to Nature to go on in her own Way, and this especially when it happens before Eruption.

IF they come in the Stage of Eruption, or any time after, they must be diligently watch'd, and nicely ma-

nag'd, according as the present Exigence shall from time to time require.

IF at these Times there be a manifest *Plethora ad vires*, the Spirits are furious, the Blood inflam'd, and the Fever, Head-ach, Watching, Delirium, and the like, be continu'd, then the Menfes are to be suffer'd a while; the Physician carefully observing, that they keep within the Bounds of Moderation, and bring no apparent Detriment.

BUT whensoever or howsoever they come, if it be evident that they occasion Vapours and Faintness, and hinder Expulsion; or if in the Stage of Augmentation, by subtracting of the Blood, Serum, and Steams, they hinder the Pustles from growing, and colouring red; in these Cases they are of most pernicious Consequence, and must be forthwith stopp'd.

As to what my own Experience hath been in this Case;

I was with one who had them break down during the Stage of Augmentation in a fluxing Sort, upon which the Pustulæ turn'd livid, and almost black: I gave her generous warm Cordials notwithstanding the Efflux of Blood, and particularly *Lapis de Goâ*, frequently and plentifully; upon which the Spirits reviving, and the Fibres recovering Tone, and the gaping little Vessels closing, the Bleeding stanch'd, the Pustles grew fresh, and she recover'd.

I waited upon a young marry'd Gentlewoman, who, without any Appearance of a Plethora, or Fervor of Blood, had the Menfes from the Beginning of Eruption, through all the Stages, continually, but never rapidly.

I then was not got into the Thought of Blood oozing out of the Extremities of the small Arteries, for want of Spirits and Tone to keep them from gaping too wide.

OTHER-

OTHERWISE I had forborn Paregorics, and given Cordials, but I insisted wholly upon Stiptics, and could not in the least restrain the Flux; and she dy'd the eleventh Day.

BUT this must be looked upon as a particular and unusual Case; for mostly, the Menfes break down by reason of acrid Serum, irritated Spirits, and hot boiling Blood.

AND then hot Regimen must carefully be avoided, and Cordials, Aromatics, vinous and volatile Spirits are pernicious; but Refrigerants, Incrassants, Stiptics, and Paregorics are indicated.

THIS very Year, 1728, I attended a Gentlewoman who was brought a-Bed the very same Day that the Small-Pox brake out; it was a Distinct Sort: the Lochia persisted, and went off in a due Manner; her Temper of Body was moderate, and her Pulse beat all along in good Order; she took not much, and with little Trouble grew well again.

STYPTICA & INCRASSANTIA.

Rx Rad. Symph. maj. ʒj. coq. in Aq. lbjss. ad ʒxij. col. adde Aceti & Syr. Coral. aa. ʒij. m.

Rx. Gum. Tragac. ʒiiij. dissolv. in Aq. Plantag. ʒx. col. ad Album Ov. Conquasat. N° ij. Succ. Urtic. depur. Syr. Alth. aa. ʒij. m.

Rx Aq. Plantag. (vel è sperm. Ranar. vel. flor. Samb.) ʒxj. Alum. rup. ʒij. Sacch. Saturni gr. vj. Syr. Alth. ʒj. m. denter Coch. vj. tertiâ quâque horâ.

Rx Alum. rup. ʒj. sang. Drac. ʒj. Sacch. Saturni ʒss. cum Alb. Ov. f. Pil.

Give Ol. Vitrioli in all her Beer.

Of HEAT and SUPPRESSION of URINE, and  
of MICTURITION.

THESE are caus'd by the Acrimony of the Serum, fiery Heat of the Blood, and violent Efforts of the Spirits, whereby the Reins, Ureters and Bladder being inflamed, pained and constringed, are hurt and disabled, and put by their Functions.

IN this Case, Dr. S. saith, nothing succeeded so well as taking the Sick out of Bed, who being supported by Assistants, when he had walked twice or thrice a-cross the Chamber, presently made Store of Urine.

Dr. Morton attempted to relieve his Patient with *Pulv. Æthiop. gr. xv. or ʒj.* to be given in the Bolus following, and to be repeated every six Hours.

℞ *Theriac. Androm. ʒß. Pulv. è chel. comp. Lap. Contray. Rad. Serpent. Virg. aa. ʒß. Laud. liqu. gt. xv. Syr. Caryoph. q. s.*

BUT this without Success. And truly, I should not expect any Good from so hot a Medicine, the Case being most certainly an Inflammation chiefly of the carnous, and not the membranous Fibres of the Kidneys, which being but of a dull Sense, feel no great Pain.

RIVERIUS his first Observation, is of a total Suppression of Urine without Pain. Willis would account for it from the strait Compages of the Blood, which would not suffer the Serum to separate from it.

BUT Riverius attributes it to a stretching Fulness of Blood, and an over-straining of the Parts beyond their Tone; and, in my Opinion, he is in the right of it, since

since he cured it by letting of Blood, without any other Remedy.

NOW if we could let Blood, in this variolous Case, it is likely we should thereby give Relief: But it will scarce ever be granted; and if it should not succeed, will be notoriously scandalous; therefore, the most powerful Thing yet known for us to insist upon in order to correct the Acrimony of the Serum, and Fervour of the Blood is, a liberal Use of *Ol. Vitrioli*: Concerning the giving of which, see *E. Hamilton's* Case, to be describ'd in its Place.

ONE had labour'd several Days of a total Suppression of Urine, without any Stone, or Drop of Water in the Bladder; whereupon Dr. *Baynard* gave a great Quantity of Acids; upon which, the Patient made Urine plentifully, and recovered.

A Member of Parliament, in the same Condition, was by the Use of Acids restor'd to Health: Several other Cases of the same Sort, and with the like Success, are mention'd in the *Philosophical Transactions*.

BUT sometimes it happens, that towards the latter End of the Distemper, when there is no Fever, nor other Illness, the Party cannot make Water freely, yet hath no Scalding of Urine, nor much Pain; this proceeds from Pustles in the Penis itself.

THIS Symptom will go off of its own accord, when the Pustles come away; but if there be need of Assistance to help it, a small Wax-Candle, oiled with Oil of Almonds, may be gently put up, and thereby the Passage will be cleared.

## Of the SMALL-P O X.

### To Preserve the EYES.

**I** Propose, for Prevention of the Pocks, and Rheums coming near, or into them, to wash them before Eruption, and all the Time of it with the following Repellent.

℞ *Aq. Plantag. (vel. Flor. Samb.)* ℥ij. *Alum. rup.* ʒij. *m.*

OR with this:

℞ *Aq. Rosar. Alb.* ℥ij. *Troch. Alb. Rhas.* ʒss. *Vitrioli Alb. Sacch. Saturn. aa.* gr. iiij. *m.*

THE Moisture of the Eyes being bak'd hard in the Hairs of the Eye-Lids, and gumming them up, shuts into them Tears, and variolated Humours, which growing sharp, hurt the tender Adnata and Pupil itself, and dull the Sight.

RUBBING of the Edges of the Eye-lids and Hairs with fresh Butter washed in Rose-Water, seems likely to do good in this Case.

It may be try'd whether the Clipping off the Cilia Hairs may not be of Use. I think they will grow again.

## Of the MOUTH and THROAT.

**A**BOUT the Beginning of Eruption, commonly a Pain seizeth the Jaws, and causeth some Soreness of the Throat.

I think this cometh only in the Confluent Sort, and I take it to be the Fore-runner of Salivation; for, upon the rising of that, it useth to go off.

Now

NOW I would not have Salivation come on, till Nature hath done what she can by expelling of Pustles; lest it occasion an unseasonable Stop to her Work.

AND Salivation is of that Nature, that when once the Matter of it is colliquated, prepared and ready for Issue, it can hardly be prevented from flowing out by any Means; and therefore I think we may safely endeavour, during this Stage of Eruption, to keep it back.

IF this could be done, it would prove a Matter of very good Consequence in the last Stage, to help the Throat when Salivation groweth thick, and can hardly be hawked up.

KEEPING of the Throat hot will attract into it much variolated Saliva, and great Numbers of Pustles, and also will inflame them; therefore it is not good to put on a Stay, but to leave the Neck and Throat as bare, and open to the Air, as they used to be at other Times.

BUT when all the Pustles are come into it that will, I then (and not before) advise putting a Stay under the Throat from Ear to Ear, to preserve natural Warmth in, and free Passage thro' the Glands, and thereby promote Salivation.

FOR this Purpose I have known a Cataplasm prescribed of Rue beaten up with *Axung. Porc.* which when it was spread upon Linen, had Millepedes bruised alive, and laid upon it; and truly I thought it did a great deal of Good.

DURING the whole Time, till Eruption is quite finished, I would have all their Drink be actually cold, that it may repel from the Throat, as also from the Oesophagus and Stomach; further, to keep back Humours, and too early a Salivation, let the Patient frequently hold in his Mouth, without gargling, this, or something like it, cold.

## Of the SMALL-POX.

℞ *Herb. Plantag. Fol. Vitis, Cortic. Prunel. filv. Balauft.*  
 $\overline{aa.}$  ʒij. *Coq. in Aq. font. ʒxx. ad ʒxiiij. in col. dissolv.*  
*Mel. Ros. ʒij. Ol. Vitriol. q. s. ad gratiam.*

OR, he may use this Electuary, and spit it out.

℞ *Conserv. Ros. Rub. Fruct. Cynosb. aa. ʒj. Alum. ʒj.*  
*Boli Arm. ʒij. Syr. Cydon. q. s. m.*

BUT after Eruption compleated, I forbid all actual cold Drinks, as also all Repellents.

SOME have fancy'd, that a Gold Chain worn about the Neck hath Power to keep the Pocks out of the Throat.

## Of SALIVATION.

**I**S it not one of the most unaccountable Things in the World, that tho' *Rhazis* plainly knew of Salivation in the Small-Pox, saying, It is necessary to forbear such Medicines as stop Spitting, because it would prejudice Respiration; yet none since him, till Dr. *Sydenham*, hath, in Books, taken Notice of this so remarkable, considerable, and frequently occurring Symptom?

THE Salival Matter is strained out of the Arterial Blood by the Parotides, Maxillares, Sublinguales, Tonfillæ, and other numerous oral Glands, in the inward Coat of the Mouth.

CHILDREN have it not, (tho' Dr. *Lister* denieth that) but commonly a Diarrhœa instead of it.

IT is not seen in the Distinct Small-Pox, but scarce ever faileth in the Confluent, and is absolutely necessary, Nature having instituted it for the carrying off of such virulent Matter, as could not be prepared to fit the Pores and Passages into the Pustles.

IT

IT beginneth in some together with Eruption; in others, towards the latter End of that Stage, or Beginning of the next.

AND if Eruption proceeds prosperously, the later and the more leifurely Salivation cometh on, the better it is to be liked; forasmuch as it shews, that the greatest Part of the morbose Matter is well concocted, and ready to go off, as it ought to do by the Pustles.

IT usually makes its Entrance with a little Soreness of the Throat, and a slight Inflammation of the Tonfils, which quickly grow well again.

WHEN the Ptyalism cometh to be settled, the Latex Serosus runneth freely, except the Pustles chance to seize those Parts, or the Saliva be sharper than ordinary; which causes the Salival Glands to swell, whereby the Passages are streighten'd, and the Current through them obstructed.

THE Matter issuing forth is at first very thin, and is spit up easily in great Quantity, so that the Sick fouleth a great deal of Linen; but it smelleth not as it doth in a Salivation raised by Mercury.

DR. *Collins* relates it of a Lady, that in the Small-Pox vented, by the Way of Salivation, two or three Quarts a Day of thick roapy Matter, and yet she dy'd.

IF the Distemper make out so as to be rather a Contiguous than a Confluent Small-Pox, a small Salivation may be sufficient to carry off as much as is needful.

BUT, in a full Confluent Sort, a small and short Ptyalism shews the Matter to be untractable, and Nature weak, which portend an unhappy Event.

7 IT should not cease, nor much decrease, before the latter End of the Disease, but be continued till all the variolous Matter that is to come into the Pustles be matured, and till the Swellings of the Face and Hands appear; namely, about the 11th or 12th Day.

THERE are some Persons, whose natural Make is such, that they are hard to be got into a Salivation even by Mercury. These, probably, will not come into a kindly variolous Salivation: What if in this Case Diuretics should be insisted on? I never used *Pulvis Bufonum*, so much cried up by Dr. *Morton* for this Purpose, for I never heard from any other that it did Wonders.

LET the Rheum run never so well, yet if Maturation proceed too slowly, or irregularly, Recovery is to be doubted of.

IF Salivation, by Reason of taking Cold, or by the undue Use of Cordials, or by keeping too hot, stop suddenly before its Time, and return not again in four and twenty Hours, utmost Danger is at Hand.

IF Rigour and Horror happen during Salivation, it is bad; as signifying that the Spirits are assaulted afresh, and a Fever Fit is to be look'd for.

IF a Diarrhœa break out in the Time of this Evacuation, it will effectually take it off, and be extreamly perillous; therefore as soon as ever it cometh, it must be immediately remedied.

IF the Salivation declines towards the latter End of the Distemper a little sooner than it should do, yet if the Head and Face swell, or a great Flux of limpid Urine then happen, these may make some Compensations, and all may possibly end well.

BUT

BUT if Salivation, Flux of Urine, and Swelling, all fail before Maturation be entirely perfected, namely, about the eleventh Day, the Case is altogether hopeless; Failure of Respiration, Faltering of the Pulse, Twitching of the Tendons, Spasms, Delirium, Coma, &c. are to be expected.

IF it runs a great while after the second Fever, and all the other Symptoms are gone, it shews, that tho' the Fire be, as it were, put out, yet all its Fuel is not spent, and the Blood is not perfectly and plenarily discharged and cleared.

OR, that it is corrupted and depraved; and it is to be feared, the Sickness will be followed by Boils, Blotches, Ulcers; perhaps the Party may come to be ill-habited, sickly, hectic, consumptive.

WHEREFORE it is highly needful to bleed and purge him thoroughly, and to sweeten the Blood with antimonial Powders, temperate Antiscorbutics, Juices of Herbs, Diet-Drinks, Mineral-Waters, and to drain off Humours by one or more Issues.

SOMETIMES after Salivation hath seem'd to cease, it hath after two or three Days return'd again afresh, and held on a long Time after the Party hath been, as to all other Matters, well recovered.

*To Promote SALIVATION.*

**K**EEP the Neck and Throat warm.

LET nothing come into the Mouth that is actually cold, or astringent.

WASH the Mouth frequently with warm Small-beer alone, or with a little White-wine, or Sal Prunel.

IF

IF the Compages of the Blood be so strict and close, as not readily to colliquate, and part with its variolated Serum, and send it into the Salival Ducts, a very liberal Use of such Drinks as dilute, refrigerate and attenuate, will be very serviceable.

*R̄ Cort. Rad. Petrosel. Fœnic. aa. ʒij. Glys. ʒss. coq. in Aq. font. lbij. ad ij. col. adde Syr. è quinque Radic. ʒij. f. Decoct. in quo dissolv. possint Sal Prunel. vel Flor. Sal Armon. vel Ol. Vitriol. pro Medic. judicio.*

SACK-WHEY is in Vogue, and perhaps the more so, beause the Nurses universally love Sack; but it is not grateful to all People, because of its fulsom Sweetness, which quenches not Thirst; and, in my Opinion, it is too full of Wine to be drank of in such large Quantities as this Case requireth.

I like better, clear Posset made with only Milk, and Small-beer, or with a very small Proportion of thin White-wine, or Juice of Limon.

BUT the very best of all Drinks is Small-beer, provided it be not bitter, sowre, nor stale and hard, nor upon the Fret.

ALL this while, the constant Use of Paregorics must by no means be omitted; for if the Fever run high, the Patient cannot subsist without them, and all will fly into Confusion: And tho' they seem a little to diminish Salivation for a while, yet when the Spirits recover their Vigour again by Rest, it will return afresh.

SEE more concerning Salivation, in the Stage of *Maturation*.

I have heard, there hath been an Attempt made to promote Salivation by the Exhibition of Calomel; but it succeeded

ceeded not prosperously, and therefore was left off again : And truly I like it not for the following Reasons.

1. THE Mouth and Throat are now swell'd up, and fore ; and this Medicine will swell them up more, and, perhaps, so much as to endanger Strangling, and Suffocating.

2. ARTIFICIAL Salivation sometimes proves very hard to be kept within the Bounds of Moderation ; and if it should so happen here, (as it may well be fear'd it will, since the Small-Pox had colliquated the Serum beforehand) it must occasion intolerable Trouble, and utmost Hazard.

3. WHEN Mercury is given to raise a Salivation, it always kindles up a Fever ; and now if another fresh Fever be added to the second Fever, which Nature had much ado to subsist with before, it is likely she must quite sink, and utterly give out.

*Of* WOMEN *with* CHILD.

THEY will be in most imminent Danger of Miscarriage, especially if the Distemper be Confluent, and mostly in the Time of the Second Fever : In this Case, the Physician hath need of an exact Judgment, and diligent Care.

If she hath been used to Miscarriage, perhaps it can scarce be prevented, by any Means whatever, in or near that Month, wherein she suffered Abortion before.

AND then it will not be Prudence in the Physician, to be over-forward, presumptuous, and officious in his Attempts, or Promises. If he carry himself warily, do little, and make his Prognostics in Time, though he cannot save the poor Woman, yet he may possibly come off pretty safe himself.

BUT

BUT when something is requir'd, and must be done, if she be tolerably strong, lively, and plethoric, she must be let Blood in the Arm, let it be what Time it will be before the Stage of Augmentation.

ALSO the increasing of the Fever, and all kind of violent Symptoms, and Disturbances, both in the Spirits and in the Blood, must be, as much as possible, prevented and allay'd.

TO these Ends, quiet and cool Regimen, Acids, Styptics, Hysterics, and Paregorics are to be order'd according as the Exigences and Circumstances shall make requisite.

℞ *Gum. Lacc. Sang. Drac. aa. ʒss. Alum. rup. gr. xvj. Sacch. Saturni gr. iiij. f. Pulv. pro iiij. Dosis.*

℞ *Conserv. Ros. rub. ʒiiij. Aq. Plantag. lbij. Ol. Vitriol. q. s. ad gratiam. f. Infus. calida per hor. j. & col.*

IN the Season, when Quinces may be had, the following Cydoniat is a most pleasant Julep, and much to be esteemed of in this Case.

℞ *Cydon. radulâ ras. ʒviiij. Aq. font. ʒxxxviiij. Stent simul in frigido per hor. j. col. fortiter express. adde Syr. è Rubo Idæo ʒiiij. m.*

I would have it here noted, that Epispastics are to be avoided, because they may cause Sharpness of Urine, and Strangury, and consequently Abortion.

I was sent for to a Gentlewoman with Child; the Pustles being come out, I was not permitted to bleed her.

SHE had such cruel Pains in her Head and Back, and such intolerable Anxieties and Restlessness, that she could  
in

in no wise bear to lie in Bed, until the Pustles being all come out, the said Symptoms went off.

AFTER this she had, at every Turn, such Pains and Bearings down, as tended towards Abortion: But these we constantly alleviated and put by with the abovesaid Cydoniat, *Ol. Vitrioli*, and *Paregorics*; of which she took incredible Quantities; the Apothecary told me, she took, as near as he could compute it, half an Ounce of *Ol. Vitrioli*, during the whole Time.

THE eighth Day black Urine came from her, and continued so to do the whole Remainder of the Sickness.

THE ninth Day, a great Number of Petechiæ broke out upon her, of so deep a Purple Colour as to be almost Black.

SHE recovered, after about sixteen Days; but some of the Scabs stuck so on her Forehead, that, it was at last Surgeon's Work for a Month to take them off, and heal the little Ulcers; and after that, she had a sore Breast, which was a very long Time before it could be cured.

SIX Weeks after Recovery, her Reckoning being fully compleated, she was brought to Bed of a Child, that was perfect and well, and likely to live: But a Week after Birth it fell sick, and at six Days end it dy'd; the two last Days it groaned pitiously, and suffered unspeakable Sickness and Anguish, and dy'd very hard.

AFTER its Death the Small-Pox came out thick upon its Breast, and Belly, and were perfectly black.

THIS Sickness hath so weaken'd and hurt the whole System of her Spirits, that she telleth me, tho' it was ten Years ago that she had it, yet she is still apt to fall into unaccountable Starts and Frights, and vapourous Affections, which she knew nothing of before.

IN this Case, I did plainly stave off, and put by Abortion, whenever it threaten'd, by mere Strength of Medicines.

AND whereas there was a Tendency from the very first to a Bleeding Small-Pox, I hinder'd a total Diffolution of the Blood; and when on the eighth Day, tho' the whole Mass of Globules was not broken, yet many of them were into their Minima, by the virulent acrid variolous Matter, and thereby as it were calcined, and deprived of Spirit and Vitality, and turned into black Corpuscles, which breaking away with the Urine, gave it that Colour.

AND many of these Globules, which were in a less Degree mortify'd, and had some little matter of Spirit with them, being set forth into the Skin, were not absolutely black, but deeply purple.

THE Case of the Infant manifestly proves, that Infection (even tho' taken in the Womb, which we might think would therefore soon take effect) may lie quiet undiscover'd six Weeks, and then break out at last.

#### *The Fourth* STAGE of AUGMENTATION.

THIS taketh up the 5th, 6th, 7th, and 8th Days.

AT this Time the Blood being in great measure freed from the intestine Tumult, by reason the Separation is finished, and the greatest Part of the variolous Matter discharged into the fleshy Parts and Cutis, the Patient is at Ease, and lieth in good Temper, and hath almost nothing to complain of.

BUT where there is a great Quantity of variolous Matter assimilated, and the Distemper is of the Contiguous Sort, it may continue all the Time of Augment; but in  
fo

so mild a Degree as not to produce any troublesome Symptoms, and is only just enough to promote a free Transpiration, Tumefaction and Maturation of the Pustles, and then it goes off for good and all.

IN the Confluent Small-Pox, this first Fever commonly continueth after Eruption, runneth through the whole Stage of Augmentation, and goeth not perfectly off till the second Fever beginneth.

BUT tho' the grossest of the morbose Matter which formeth the Pustles, be, in the Time of the foregoing Stage, carried out into them, yet it is further more absolutely necessary in this Stage of Augmentation.

THAT both the more subtile Halitus, or variolous Gas, never cease perspiring and flying off through the Pustles and Spaces about them; and also that sanative Steams and Serum incessantly continue passing into the pustulary Phlegmons the whole Process of the Disease, whereby Matter may be furnish'd for the Support and Growth of the Pustles, and Maturation afterwards may be performed.

THESE Steams were wont, in Time of Health, to pass off by sensible Sweat, and insensible Perspiration; but now the Figures and Bigness of these little Corpuscles being by the febrile Coction, and variolous Copula's, made different from what they used to be, only the most subtile and minute of them transpire, and the rest do partly run into the Pustles and Interstices, and partly remain within the Mass of Blood, to pass off by Salivation and Tumefaction.

IF these Steams be temperate and benign, and bear out universally and regularly, the Pustles will stand up round, grow sensibly every Day in all their Dimensions, even to

the Bignefs of a Pea in the Hands, but not fo large in the other Parts:

FOR the Pustles in a Distinct Sort on the Hands and Feet are large, but are lefs and lefs the nearer they approach the Trunk.

THEY generally arrive to their juſt Height the eighth Day, and then begin to dry up into Scabs and fall off.

BUT the Pustles on the Hands being more pertinacious than thoſe on the other Parts, continuing freſh and white, hold out a Day or two longer, and then go off by Diſruption; but thoſe of the Face and other Parts, by Diſquamation.

IN the Confluent Sort, the Eruptions, during the Stage of Augmentation, riſe not up conſiderably into Pimples and Heads, (as they do in the Diſtinct) but flowing into one another in multangular and irregular Figures, remain flattish.

AND, where the Diſeaſe runs high, appear like a red Bladder covering all the Face; and afterwards ſhewing like a white Pellicle ſticking to the Face, they riſe not much higher than the Surface of the Skin.

ABOUT the fifth Day, the Baſes of the Pustles, which at firſt were pale, begin to look red like a Damask-Roſe, and ſwell with a ſtretching, tearing Pain; which Pain hourly increaſing, occasions there ſuch a Tumour and Inflammation, that the Diſeaſe proceeding on, the Eye-lids are ſo filled and tumefied, that oftentimes the Sick is deprived of Sight; and when they are thus ſwell'd, they appear cleariſh and reſplendent, ſomething like Bladders filled with Water: But this happeneth not, unleſs a great Number of Pustles are thrown out there.

By degrees the Swellings take the Head, Forehead, Face, Throat, and after that the Hands; and all this without any remarkable Height of a Fever, where the Small-Pox is a distinct Sort.

SOMETIMES it happeneth, that when the Patient hath been injured by unnecessary Bleeding, Purging, or a too cold Regimen, the Pustles flatten on a sudden, and flash abroad, whence now and then a Diarrhœa supervenes, so that the Patient, if he be adult, is in imminent Danger; for the variolous Matter being drawn in, Nature is altogether unable to eject it again by the Pores, and keep it out.

BUT Symptoms that proceed from Cold rarely occur, for this being a vehement hot Distemper, an Error on this Side is much less, and seldomer happens than on the other.

DR. S. informs us, that the Sick in the Distinct Sort is so apt to sweat, that he can hardly be hinder'd from it; and sometimes, where he hath been over-heated with Cloaths, or Cordials, at length, those Particles being eliminated by Sweat, that should have served for the Elevation of the Pustles, and Swellings of the Face, the Interstices grow flaccid, and wither, tho', at the same Time, the Pustles themselves look red, and continue elevated, even after Death.

AND the Sweat which flowed to the eighth Day, now of a sudden, and of its own accord, quite stops, and cannot be recovered by even the highest Cordials.

AND the Sick is taken with a Frenzy, Anxiety, Tossing about, violent Sickness, makes Water frequently, and but little at a Time; and in a very few Hours dieth: But this I take to be a very rare Case.

WHEN

WHEN the Fever, together with the morbose Matter, is come perfectly out of the Blood, and settled in the Habit of the Body, the Face will swell even to Blindness; the Sick will at Times be sore all over; the Pustles will grow up to their due Bulk; will become full and plump; and then by degrees white, soft, and ripe; quickly after will look shrunk and wrinkled, and then dry up into Scabs; and the Distemper ends the eighth or ninth Day.

WHEN they stand up with raised Heads, and look of a fair Rosy Colour round their Bases, it is a sure Sign that Nature works well, and sends out Serum and Steams, with variolous Matter, duly and effectually, and that it hath begun that moderate Inflammation, which is necessary to bring them to Maturation.

WHEN the Eruptions continue flattish, and grow not out, and want Colour, we are to conclude, that tho' the morbose Matter perhaps may not be very virose, yet there is a Failure in the Spirits; they are not lively and brisk enough to push out variolated Serum and Steams into the outer Parts as they ought to do.

SOMETIMES tho' the Serum is not much tainted with very virulent Particles, yet it happens that so little of it is sent into the Pustles, that they are starved and never grow considerably in Dimension, or Heighth, nor come to fair Maturation, but continue hardish, and contain but little Pus. This Sort the Nurses call a Horney Pock: It is apt to leave much Foulness in the Blood, producing Boils and Blains.

SOMETIMES when the Growth of the Pustles is begun, the Supply of Serum stoppeth, and then they cease growing in Bulk, but yet gain something of a solid Consistence and Hardness. After this, upon some Occasion or other, the Emanation of the Serum returneth; but that  
fresh

fresh Serum being not able to sink into and incorporate with the harden'd Pustles, makes a new Top to them; even as a Drop of Tallow, melted down upon a Drop of hard Tallow, will stand up in a distinct Head. This they call an Acorn Pock, conceiving it represents an Acorn in its Cup: It matures not kindly.

SOMETIMES when the Pustles have attained almost their utmost Growth, and are risen up, and stand fair for some Days, divers of them shall have a Dimple in their Apex.

THIS is caused by over-hot Treatment, or by Weakness of Spirits, and Failure of Steams; for the Basis of the Pustle remains firm, and the Body of it shrinks not, yet its Apex wanting Supply sufficient to fill, and stretch it up plump and round, sinks into a Pit.

THESE Pits have commonly a black Speck scarce so big as a Pin's Head in their Centre; which is because that Particle of the Cuticula which covers the Top of the Pustle, being exquisitely thin, and not kept vivid by the Affluence of the vital Spirits, becometh black, and as it were mortified; the more substantial Pustle itself, and the Flesh about it, continuing at the same Time vital.

WHERE the Eruptions are very anomalous, come to Blisters, Sores, and Sphacelations, and where they break out in the Viscera, it seems to me, that the variolous Matter is venomously acrid, and volatile in a great Degree; that it was not rightly extricated, and subacted; that it hath join'd the Globuli so as to form with them such irregular, ill-sized, and shaped Composites, as were not fitted to the Passages and Pores for Excretion, and could never get out in due Form.

WHERE Petechiæ appear among the Pocks, we may apprehend that many of the Globuli (though not all universally

verfally through the whole Body) are broken into their minuteft Atoms, and fo envenom'd that they cannot unite again into common fized Globules.

WHERE thefe Petechiæ are of a bright Red, we know that they yet retain fomething of vital Spirits, and are not paff all Poffibility of Recovery; and the more they defect from this Colour into a deep Purple, the worfe they portend.

BUT where they are Lead-Colour'd, Black, or perfectly Blue, they muft be looked upon as abfolutely deprived of Spirits, and effectually mortified.

WHERE they ftrike in again, they demonftrate Want of vital Spirits, natural Heat and Vigour, and they will never come out any more, till the Party be dead.

*THINGS to be avoided and done in the* STAGE  
*of* AUGMENTATION.

**I** Do not as yet advife Epifpaftics (except in particular Cafes) for the Reafons elfewhere given.

I abfolutely forbid hot Regimen, fpirituos or aromatic Cordials, vinous and other ftrong Drinks.

UNLESS to fuch who by a foolifh or vitious Cuftom have made them habitual, and almoft neceffary to them.

ALSO to fuch as are antient, are of a cold weakly Conftitution, that really ftand in need of Warmth and Support.

SUCH as have been brought low by unnecelfary Bleeding, Vomiting, Purging, Sweating, &c.

WHERE

WHERE there is Sickness at Stomach, Fainting, and such a Sinking of Spirits, that they cannot drive out the variolous Matter till rais'd up and fortify'd.

BUT in general, there is seldom any need of Cordials at all, and the Abuse of them is of ill Consequence. Dr. S. never alloweth them till Eruption is finish'd.

*Si ob Nutricum clamores necesse unquam fuerit, ut Cordialia concedantur, prudentis erit Medici, & boni Viri istiusmodi solum præscribere, quæ Inania sunt, & prorsus Innocua; ita earum Importunitati satisfacere, atque ab Inscitiæ, & Negligentiæ Imputatione, se defendere poterit.*

℞ CCC. ʒij. f. Pulv. in vi doses dividend. sextâ quâque horâ, cum cochl. v. Fulap. exhibend.

℞ Aq. Lact. Alexit. Ceras. nig. aa. ʒiiij. Aq. Cinnam. bord. ʒiiij. Syr. Caryoph. ʒj. Fol. Auri N° j. m. f. Fulap. Cord.

BUT if the Pustles grow slowly, the Interstices continue pale, the Flesh feeleth cool, the Pulse be feeble and slow, and the Party have sick Fits, or a Despondency of Spirits, it manifestly appears, that Nature wants Assistance.

IN these Cases, a warmer Regimen, and reviving Cordials, are necessary.

℞ Pulv. è chel. Cancr. comp. Lap. de Goâ aa. ʒss. Rad. Contray. gr. v. Ol. Cinnam. gt. j. Succ. Cherm. q. s. f. Bol. cum Fulap. cochl. iiij. assumend. & pro Medici judicio repetend.

℞ Aq. Lact. Alexit. ʒvj. Ment. ʒj. Cinnam. fort. ʒij. Pæon. Comp. Epidem. Theriacal. (sine Acido) aa. ʒj. Margarit. præp. ʒj. Sacch. cand. alb. ʒiiij. m.

*Cordis regioni applicari potest Empl. ex Theriacâ vel Mithridatii ℥iij℥. & Terebint. Venet. ℥℥.*

BUT as soon as ever it is observ'd that Nature riseth, these Cordials must instantly be left off again.

THE Spirits must be continually kept up in Vigour; yet constant Care must be taken all along that they fly not into Disorders: To this Purpose Paregorics must be given in such Doses, and at such Times, as the present Case shall require; generally speaking they should be given every Evening.

NOW to promote the due Efflux of variolous Vapours, Steams, and Serum, besides keeping the Body in an adequate, constant, easy (and, as 'twere, incubating) Warmth, and the Spirits quiet, 'twill be needful, that the Sick drink very plentifully such Liquors as may supply Matter for it, and are not remarkable for Heat or Cold; such as small Beer, Posset, Barley Water, Emulsions, &c.

IF the Serum be grown so acrid, and fierce, and sharp, as continually and vehemently to irritate the Spirits, and liquify the Blood, its Acies and Aculei are to be,

1. BROKEN off, blunted, and corrected by Acids.

℞ *Glycyrrh. Conf. Ros. rub. aa. ℥j. coq. in Aq. font. lbij℥. ad lbij. Col. adde Succ. Limon. ℥ij.*

℞ *Aq. font. ad med. coct. lbij. Syr. è Rubo Idæo ℥iij. Ol. Vitrioli q. s. ad Aciditatem idoneam. m.*

2. TO be incrassated, dulled, and sheathed with soft, mucilaginous, incrassating Medicines.

℞ *Hord. perlat. ℥℥. Glycyrrh. ℥ij. Passul. Sol. ℥ij. Ras. CC ℥ij. coq. in Aq. f. lbij. ad ij. subfinem add. Conserv. Ros. rub. ℥ij. f. Col.*

℞ *Fic.*

℞ *Fic.* ℥iiij. *Raf.* CC ℥℞. *coq.* in *Aq.* lbij. *ad* ij. & *Col.*

℞ *Gum. Arab.* ℥iiij. *dissolv.* in *Aq. hord.* lbij. *adde Album Ov. conquassat.* ℥j. *Syr. Alth.* ℥iiij. *m.*

℞ *Passul. Sol* ℥iiij. *Glycyrrh.* ℥ij. *coq.* in *Aq. f.* lbij. *ad* ij. *in col. dissolv.* *Gum. Tragac.* ℥iiij. *m.*

*Gum. Tragac. G. Lacc. Lentas,* and the like Incrassants, were us'd by the Antients (tho' I like not *G. Lacc.* in Decoctions, because it boils bitter) to thicken the thin Blood, and sheath the *Spicula variolosa*; but this Use being not well understood by our Moderns, I conceive was the Reason why they left them off.

A Spoonful of Jelly of Hartshorn may be dissolv'd, and given now and then in Water-gruel.

It happens too-too often in this fervent Distemper, that the Crasis of the Blood is so weaken'd and broke, by either the Virulence of the Matter, or over-hot Regimen, and so highly inflam'd, that it is no longer able to send out the Serum, and eject the fiery Particles leisurely and duly; and upon that the Head and Face swell not at all, or sink again before their Time.

SOMETIMES, by reason of too great an Ebullition of the Blood, the Sick is seiz'd with a Phrenzy; and is so unable to bear the Heat, that he endeavoureth with all his Might, to free himself from those that confine him to his Bed.

SOMETIMES the same Cause produceth a contrary Effect, a Coma, so that the Patient scarce ever wakes, unless he be continually rows'd up.

HERE some would take the Sick out of Bed, make him walk some Turns about his Chamber, set him with his naked Breast at a Window, put him on a fresh Shirt

and Sheets, Bleed, or give a Glyster ; but if these should not succeed happily, they would fasten an indelible Mark of Infamy upon the Physician.

I am utterly against Epispastics, even in the Coma itself, when it is caus'd by Heat and Acrimony, much more in the other Symptoms.

THE Assistance I can think of, is to give fresh Air into the Chamber, strew the Floor with fresh fragrant Herbs, open the Curtains, lighten the Bed-cloaths, let him turn in Bed as much as he will into cold Places ; give liberally Refrigerants and Acids.

IF the variolated Serum, with its virulent Gas, which hath been out of the Blood in the Habit, be afterwards either repell'd, or attracted in again, it as 'twere poisons afresh the Blood, kindles a malignant Fever, and produceth the worst of Symptoms, Phrenzy, Coma, Convulsions.

To hinder such a Return into the Blood, the Body must be kept in an adequate constant Warmth, and the Spirits quiet ; the Sick must drink very liberally to supply the Wastes of Serum ; his Liquors must be such as are refrigerating, diluting, liquifying, to make it fluxile.

ABOVE all Things Paregorics must be given as often as needful.

NOW besides the increas'ing of Serum, correcting its Acrimony, and preventing its Return into the Blood, I propose in the latter End of this Stage to prepare it for Maturation.

THE Aliments and Medicines proper for this Use are, as to their Substance, soft, smooth, slippery, pulpy, mucilaginous, glutinous, oily ; and as to their Operations, are neither hot nor cold, nor much dissolving nor coagulating ;

coagulating ; but they obtund Acrimony, inviscate Asperity, mollify hard Concretions, digest crude Humours, and turn them into Pus.

I would begin the Use of these the seventh Day, and continue them till Maturation be pretty well finish'd.

*Ad hunc usum F. Sylvius mirè prædicat Antimonium Diaphoreticum, atque exhibet ejus ℥℥. bis in die.*

℞ *Sperm. Ceti. Vitel. Ov. aa. ℥℥. optimè subactis adde Syr. Balsam. ℥iij. Aq. Puleg. ℥ij. m. f. haust. bis indiès assumend.*

℞ *Sperm. Ceti Sacch. alb. aa. ℥℥. Ol. Nuc. Mosc. gt. j. Syr. de Mecon. q. s. m. f. Bol. bis in die exhibend. cum haustu Decoct. alicujus Pectoralis.*

### Of LETTING BLOOD in the STAGES of ERUPTION and AUGMENTATION.

**I**F during this Stage there be a Plethory of hot Blood, and the first Fever sensibly sinketh not, but continueth running high, and be accompany'd with torturous Pains in the Head, Back, or Limbs, with anxious Inquietude, pertinacious Vigils, Vertigo, Delirium, Coma, Difficulty of Breathing, and the Pocks come not forwards, but stick in the Skin :

AND also where cool Regimen, Attemperants, and Purgatives have not sufficed to moderate the Hurry of the Spirits, and Fervour of the Blood :

AND withal, if the Party were wont formerly to bear Bleeding without fainting ; and it be a proper Time of the Month with Women :

IN these Cases, I am clear in it, that Bleeding is so necessary, that it ought not to be omitted, and may be order'd any of the four Days of Eruption.

BUT after that Time, when the first Fever hath run out its whole Course, and the Party finds himself pretty easy, (as he commonly doth in the Time of Augmentation) I not only think there can be no pressing want of Bleeding, but also conceive it will prove of most pernicious Consequence.

FOR it will be likely to put a full Stop to Augmentation, and occasion that the morbose Matter which could not be expell'd in the Term of Eruption, be retain'd in the Blood, till it be deprav'd into such Virofity, as will produce a most terrible second Fever.

HERE some Physicians have chose to take away Blood rather by Cupping and Scarifying ; their Reason, I suppose, is because this slow Evacuation giveth not Nature so rude a Stroke, as that by the Lancet would do ; and so this is more easily borne, without Danger of fainting, or even any failing.

BUT perhaps it may be as well to use Phlebotomy, and let out  $\text{z}ij.$  of Blood at a Time, for several Times, at an Hour's Distance between each, till  $\text{zx.}$  or as much as is judg'd needful, be evacuated.

### *Of PURGING in the STAGES of ERUPTION and AUGMENTATION.*

PURGING attracts Matter out of the Mass of Blood into the Intestines, and therefore it seems to me by no means adviseable during the Stages of Eruption and Augmentation.

FOR

FOR it directly opposeth Nature, and hindereth her from driving into the Superficies variolated Steams, for the Support and Growth of the Pustles and Tumours ; and also diverteth the groffer Serum from coming into the Glands of the Mouth for Salivation.

AND truly, I do not apprehend any great Necessity of emptying the Guts before the Time of the second Fever : For,

1. No solid Food, nor great Quantity of any Sort commonly is taken in during the whole Decumbiture, and therefore no great Quantity of Excrements can be made in the Guts.

2. So much Matter is daily sent off both of Steams and Serum by Diaphoresis and Salivation, that there cannot be a great deal left to run in to burthen and stop up the Intestines.

3. IT is not the Genius of this Disease always to cause hard Excrements, unless perhaps towards the latter End of the second Fever, and that happens but seldom neither ; for I have often observ'd, that when the Sick hath not had a Stool in twelve Days Time, the first he voided was not of an hard Consistence.

NOT only the abovesaid Reasons, but Experience also, hath set me utterly against Purging in these Times of the Disease.

I knew a Gentleman of about 48 Years of Age, who a few Years ago lay ill of the Small-Pox at *London* : About the sixth Day after Eruption a Glyster was injected ; the next Day another ; by which he voided a very strange Quantity of Excrements, so much, that he could have scarce any left in him.

UPON this, both Colour and Tumour of the Pustles and Interstices presently went off; and tho' he was a Man of uncommon Robustness and Vigour, his Strength immediately fail'd, and his Spirits sunk to that Degree, that he lay languishing like one almost dead; and at last, when the Matter of the Ptyalism grew thick, he was not able to clear it out of his Throat, and so he expir'd the 11th Day.

A Person of about 50 Years of Age, of a swarthy Complexion, a dark thick Skin, a dull heavy Man, had every Day duly a Stool; which, tho' it was not loose, but of a figur'd Consistence, yet had such an Effect, that his Pocks, which came out full and fluxing, never rose well, never look'd red, never became sore, never contain'd much ripe Pus; at length the Scabs look'd almost black in his Face, and continu'd sticking on it a great while after the variolous Fever had left him.

HIS Head and Face swell'd very little; he had no Salivation, nor sore Throat; his Flesh never felt hot; and Urine was not high-colour'd, and his Pulse beat no quicker than is usual in time of Health.

AT length he seem'd to be got past his Disease, and was let Blood twice, and purg'd several Times.

BUT yet his Spirits never came again; he could not bear to sit up long out of his Bed; he lay in a weak languishing Condition; was sometimes delirious, and dy'd afterwards.

ON the 23d Day, and three Days before he dy'd, he grew very sick, could contain nothing in his Stomach, but vomited up every thing.

I take it, that the variolous Matter was, by the daily Stools, intercepted, and hinder'd from passing off, as it ought

ought to have done, by Diaphoresis and Salivation, and the Blood and Humours were poison'd by it, and consequently a third Fever was thereby caus'd: Perhaps a good warm Regimen, and generous exagitating Medicines, during the Stage of Augmentation, might, in this Case, have been serviceable.

*The Fifth STAGE of MATURATION.*

**T**HIS taketh up the 9th, 10th, 11th, and 12th Days.

IN this the Things to be regarded are, 1<sup>st</sup>, The Second Fever. 2<sup>dly</sup>, The Pustles. 3<sup>dly</sup>, The Mouth and Throat. 4<sup>thly</sup>, Salivation. 5<sup>thly</sup>, The Swellings.

*Of the SECOND FEVER.*

**I**N the distinct Small-Pox, the morbose Matter not having been over-heated, nor made virulent, nor much boiled into the Blood, but remaining benign and loose, exciteth no considerable Fever; and so being placidly deposited into the Pustles and outward Parts, they mature kindly, and dry up into Scabs; and so the Distemper cometh to a Conclusion the eighth Day.

WHERE the Distemper inclineth rather to the contiguous than confluent Sort, the Fever is moderate, and is easily borne, and scarce holds out till the twelfth Day.

BUT where it is highly confluent, the second Fever is of a much more troublesome and dangerous Nature than the first.

It beginneth about the eighth Day, and increaseth from Day to Day, so as at last to set the whole Body, Solids as well as Liquids, on Fire; and continueth to the twelfth, when the great Catastrophe of Life or Death usually cometh on.

THE Causes of this Fever are,

1. THOSE variolated Corpuscles, which not having been rightly concocted at first, and fitted for Eruption, were left in the Blood, and by means of disorderly Ebullitions, Conquassations, and Heatings, being subtiliz'd and exalted into great Degrees of Virofity, combat the Spirits, and fire the Blood.

2. THAT morbose Matter, which had, in the Time of Eruption and Augmentation, been cast out into the Pustles and Habit of the Body, and there detain'd, till it became abominable to the vital Spirits; for when this cometh to be thence suck'd again into the living Mass, (as it commonly happeneth to be at the End of the Stage of Augmentation, or Beginning of Maturation) it must of Necessity stir up most horrible febrile Conturbations.

3. STERCORACEOUS, bilious, and pancreatic Excrements, that have been collected and shut up in the Intestines all the Time of the Decumbiture; and together with these, the variolous and other Matters that have been daily flung out of the Blood, and deposited there; for these, not only by stuffing up, and painfully stretching the Guts, but also by sending along with the Chyle, through the Lacteals, poison Humours and Halitus, drive Nature into the utmost Sufferings and Distractions.

THIS Fever is more or less violent according to the Nature of the Sick, the Manner of Treatment, and the Degrees of Virofity of the morbose Matter.

THE Measure of the Fever is to be estimated, not by the outward Heat only, which may be greater in the external Habit than in the Blood, (and should of right so be) but by the Pulse and Respiration.

I find I usually have in half a Minute 40 Pulses and 10 Respirations nearly ; and these Numbers I point upon as my Standard to make Computation by.

IN a very venomous confluent Pox, the Blood being universally poison'd and putrify'd, as the virulent Matter passeth in Circulation thro' the Heart and Lungs, it impresseth horrid Sensations upon the spontaneous Spirits ; and hereupon Respiration becoming laborious, short, and frequent, and Pulsation so weak and quick, that it can scarcely be number'd.

I have observ'd in some about 80 Pulses and 20 Respirations in half a Minute ; but never near that Number in any that recover'd.

WHEN the Distemper is violent, a Sort of Paroxysm returneth every Evening, wherein the Symptoms rise remarkably higher.

WHEN this Fever is kindled up to an Height, the Sick burneth all over ; all the Flesh is as hot as a Coal ; is swell'd up every where with throbbing Soreness, and ulcerated Pustles ; the Tongue trembles ; Thirst is unquenchable, but is felt most in the Throat, because the Pocks are there, and not in the Stomach ; the Pulse becometh quick, Respiration short, the Sick can get no Sleep nor Ease, without forcible and frequent Anodynes ; lyeth in intolerable Distress and utmost Anguish.

BUT notwithstanding all this, he seldom complains of any positive Sickness, (unless it happeneth that the Viscera

cera are affected) because all tendeth outwards; infomuch that (where Matters proceed prosperously) if a Hand be put into the Bed, so as to almost touch the bare Breast, a warm moist Halitus or Atmosphere may be very plainly felt transpiring from the Body.

IF the vital Spirits are so weaken'd and spent, that they can no more suffice to generate Recruits, and support the Animal Spirits in the Brain and nervous Regions, all the Animal Functions must needs be weakly and imperfectly perform'd.

IF the Animal Spirits be so possess'd and seiz'd upon by variolous Copulæ, as to be thereby vehemently provok'd into distemper'd Explosions, then they will cause Vigils, Phrenzy, Spasms, &c.

IF they be overpower'd and struck down with the inimical Forces, they will yield to Stupor and Coma, and then die away.

IF the Animal Spirits be so much clogg'd or wasted, as not to be able to furnish out new Recruits, to supply and invigorate the stationary Spirits, which, for the Uses of Sense and Motion, are appointed to reside and do Duty in the Muscles, they will occasion such convulsive Twitches in the Tendons, as are the Forerunners of Fate.

BUT if it come to that pass, that the spontaneous Spirits be not continually new generated, or be envenom'd, and made unable to perform their Functions, or be profusely wasted, or be downright kill'd, then the Motion of the Heart and Lungs, those main Wheels of Life, stopping, the human Machine must cease going, and become Inanimate.

IF on the eleventh or twelfth Day the Fever seemeth a little to relent, and the Pulse grow manifestly stronger,  
more

more flow and distinct, and especially if the Urine have lately alter'd and broke, and let fall a Sediment; where these Things have happen'd, I never yet knew but that the Patient recover'd, let him have been before in never so dangerous Circumstances as to any other Matters.

THOSE that do not recover, for the most Part grow stupid towards the last; and when they once come to this, their Condition is desperate and helpless. They die generally on the twelfth Day, and some on the eleventh.

TOWARD the latter End of a very bad confluent Small-Pox, the Sick, being all on fire, and in sore Straits, grows stupid, and utterly helpless, is almost strangled, and seems drawing on; and Life hangs on so slender a Thread, that it is in Danger of being broken by the least Accident, Commission, or Omission.

HERE therefore (if ever) it lyeth upon the Physician to consider and deliberate, to the utmost of his Power, all the good and bad Effects that are likely to follow from his Orders and Prescriptions.

IN this frightful Extremity, I confess, I should scarce have the Courage to take the Sick out of Bed, make him walk sometimes about the Chamber, expose him to the Air, &c.

MUCH less should I venture to give a Vomit; lest thereby the Candle of Life, that burneth so weakly and waveringly, should be quite put out, to the everlasting Infamy of the Adviser.

THE Patient must be every Minute carefully watch'd, and from time to time succour'd.

HERE Attemperants, Refrigerants, and Attenuants are to be us'd, *Sal. Prunel.* and *Ol. Vitrioli* are very serviceable; but let it be observ'd that they are never to be given together,

gether, because when they are mix'd, they produce something that hath a Cognation with *Aqua fortis*.

DR. S. saith, that to resist this febrile Impetus, it must be seriously consider'd, that this adventitious Fever is a Disease quite different from the Small-Pox, and is no other than a putrid poisonous Fever.

THE following Method he useth, and declareth he knoweth no other that he can recommend.

WHEN the Sick is reduced to these Streights, that by Reason of the unusual Violence of the Symptoms, he seems just about to expire, unless he be presently relieved: In this Case, whether it be the eleventh Day, or some other after it,  $\text{℥x}$ , or  $\text{xij}$  of Blood are immediately to be taken out of the Arm.

FOR tho' Paregorics, and keeping from Bed a Days, might suffice, without letting Blood at the Beginning of the Disease in the first Fever, to quell the Fury and Paroxysm which invades in the Evening; yet in these Days of the second Fever, we cannot trust in any Thing but large Bleeding, by which alone the Fury, at this Time raging, may be safely quieted.

AT Evening an Anodyne is to be taken, as before, in a large Dose, to which we now fly as to a Sanctuary; and so afterwards Morning and Evening, and sometimes oftener.

FOR we must diligently observe, that in some the Fury is so heighten'd above measure, that even a large Dose of the Anodyne cannot tame, nor indeed stop its Violence in less than twelve Hours; in which Case, it is absolutely necessary that the said Dose be repeated every eight or six Hours.

AND

†

AND whereas it often happens at the latter End of the Disease, partly from the Nature of it, and partly from the great Force of the Anodyne, that the Patient's Body is so bound, that then he is almost suffocated ; and the Fever is so heighten'd, that he is in a desperate Condition :

IN this Difficulty, there is much less Danger from taking a laxative Purge, than from the Fever, much heighten'd by the Excrements.

I have prescrib'd successfully  $\mathfrak{z}\mathfrak{j}\mathfrak{ss}$ . of *Lenit. Elect.* dissolv'd in Water ; which Draught, tho' it may not operate so soon as it was wont, yet if it be given in the Morning, it most commonly works before Night.

BUT if it does not, yet the Paregoric is to be given in the Evening, and indeed sooner, notwithstanding the Purge, if Inquietude, or some considerable Sickness threatens Danger ; lest the Patient, being destitute of this Help, die while we wait for the working of the Medicine.

NEITHER will the Patient receive any Damage from so gentle a Purge, if it do not work at all ; yet if it do not answer your Desire the first Day, let it be repeated the Day following, which seldom fails.

BUT if it be judg'd that it hath purg'd away so much of the Filth the first Day, as is sufficient for the present, and the Patient begins to be better afterwards, the other Dose may be deferr'd to another Time.

AND after this Manner, both Bleeding and Purging may be repeated by Intervals, as the Condition of the Fever, and the Restlessness of the Patient seem to require, till at length he be out of Danger.

## Of the THIRD FEVER.

**T**HE second Fever beginneth the eighth or ninth Day at furthest, when it is regular.

BUT sometimes upon the twelfth or thirteenth, when all should come to quiet again, a new Fever breaketh out afresh, with Restlessness, Suffocation, and great Violence, especially every Evening.

I have not very often seen this third Fever ; but upon the best Observations I have been able to make,

IT proceedeth on to the sixteenth Day ; and if it stop not quite before then, it sensibly remitteth, and seemeth more moderate ; but notwithstanding persisteth till the twentieth, twenty-fourth, sometimes till the twenty-eighth Day ; and then it is (as I think) always fatal.

FOR as an House that is burnt, when it is fallen down, tho' it ceaseth to flame out any more, yet its Ruins, under Heaps of Embers and Ashes, continue to burn inwardly, till all that can burn be consum'd.

EVEN so (because the Spirits are flown off and spent) the Globules flame out no longer, but yet continue burning and smothering till they are reduc'd to Cinders and Ashes, and have nothing left that is combustible ; and then the Fire of the Fever, together with Life, goeth out.

I think we may properly (without Affectation of Novelty) call it the *Third Fever*, since it succeeds the second, seems perfectly distinct from it, and ariseth not only (as that doth) from putrify'd Matter and Vapours brought from the external Abscesses by the Veins into the Blood, and from the intestinal Contents long detain'd ; but from,

I. VARIOLOUS

1. VARIOLOUS Concretions, which having been innumerable Times circulated and boil'd into the Substance of the Blood, are now grown into such hard and unconquerable Moleculæ, that weak Nature could not break and fit them for the Pores, and throw them out when she attempted it in the second Fever.

2. THE deprav'd Blood itself; for as to its Globuli, their State now is such, that most of them are shatter'd into their Minima by violent Agitations, are envenom'd by morbose Copulæ, and calcin'd, as 'twere, into Cinders and Ashes by the Fire of a flaming Fever.

As to its Fibrillæ, they are scorch'd and shrivell'd up, like Srips of burnt Parchment, and give an Empyreuma to the Mass.

AND the Serum and mucilaginous Parts are boil'd up into a thick strong Size, (as appeareth from Blood let out at this Time) which by laying Obstructions in the small Passages, causeth unequal Circulation, Extravasation, and Inflammations.

3. *VARIOLÆ internæ*; for when the morbose Matter hath not been duly expell'd into the outward Parts, it sometimes turneth inwards, and infecteth the Mesentery, Liver, and other Viscera, with Pustles, Apostems, and Ulcers; and the putrid and poisonous Matter issuing from them filleth and fouleth the Blood, and exciteth a fresh Fermentation, and kindleth up this third Fever.

DR. Collins (*Anat. p. 67.*) giveth an Instance of this third Fever, saying,

A Person of great Honour had the Small-Pox break out full and fair; they came to Suppuration with white Heads full of white digested Matter; when they began

to dry into Scabs, large blue Spots came out interspers'd among them : She dy'd the 17th Day.

A Gentleman had the Small-Pox, appearing very fair and distinct ; they came to a laudable Suppuration, and the Scabs were falling off, and it might have been thought he was upon Recovery ; but it happen'd otherwise ; for tho' the Small-Pox were cur'd, yet the Fever continu'd high, and was accompany'd with quick tremulous Pulse and a Delirium ; so he dy'd.

### *Of the PUSTLES.*

**T**HE Force of the circulating Blood having push'd them out into the Superficies of the Body, they gradually increase, and at length become little Abscesses, and then run through the same Degrees of Crudity and Maturation as other Abscesses do, and dry up into Scabs : All which, if rightly perform'd, Things go well ; for a great Part of the Recovery dependeth upon these.

THE Manner how Nature worketh in the Process of Maturation some have endeavour'd to explain, and particularly *F. Sylvius* doth it in this wise :

A Portion of Blood stagnating in some Place, and there causing a Tumour and Inflammation, its Spirits and most volatile Parts fly off.

UPON this the acrid and saline Particles, which used to be kept in temper by the said Volatiles, grow very acrid, and rising up sharply against one another, do, by the Help of the oleose Corpuscles, excite an hot Effervescence in the Blood, which they corrupt, and turn into Pus.

BUT by such like chymical, chymerical, and precarious Assumptions and Solutions, I cannot find that I am  
let

let a whit farther into Nature's Laboratory than I was before; and therefore I content myself with modestly acknowledging, that as an Apple, or any Fruit, groweth on from Crudity to Ripeness, by the Addition of such Corpuscles as I know not, and by such Modifications as I apprehend not, Nature proceeding secretly and gradually till she hath compleated her Work; even so doth she makes Pus by Ways and Means utterly unknown to me.

BUT be that as it will, it is plain, that Pus is made always out of thin Sanies, which being acrid and corrosive, paineth, inflameth, and eateth into the Part; but when it is once converted into thick white Matter, it loseth its Acrimony, and corrodeth no more; though if it continue long in the Part, it will contract a fresh Acrimony and corrosive Quality again.

NOW though it is possible that Serum and Size, without the Mixture of Globules, may make Pus, as we see in the Instance of Blisters rais'd by Cantharides, where at first only Serum cometh out without the least Tincture of Blood, and in a few Days that Serum turneth into ripe Pus.

IN other Ulcers also, that Ichor, which was at the Beginning only a thin Gleet, without any Redness, afterwards becometh digested Pus.

BUT all Swellings that are inflam'd, red, and painful, are caus'd by a Mixture of Serum and Globules; and by the Redness, and Pain of the Pustles and Interstices, we conclude it is so in the Small-Pox.

THIS variolated Mixture, by reason of disagreeable Conformation, cannot pass through the Cuticula, but lyeth lodg'd under it, in the Cutis and miliary Glands; and since its Constitution is such, that it causeth little Phleg-

mons which cannot be discuss'd, Nature hath no Way left to deal with them, but by bringing them to Suppuration.

FOR the doing of this it is absolutely necessary, that the deposited Matter remain there fix'd, and return not again into the Blood.

AND this Return inward can be prevented only by the temperate Vigour of the Spirits, orderly Motion of the Blood, constant bearing out of Steams, and by a steady digestive Warmth.

THE Pustles in the Face, which to the eighth Day were smooth and red, then grow rough, and somewhat white, which is the first Sign of their Maturation begun.

MOREOVER, they cast forth a yellowish Moisture, colour'd something like Honey in a benign Sort; but darker and blacker, according to the Degree of Malignity in bad Sorts.

IN a very ill Flux indeed, from about the ninth Day, the red Pellicle, which (as before said) covers all the Face, daily groweth rough to touch, and inclineth to a dark brown Colour, and not (as in the distinct) to a yellow.

THE Roughness and Brownness increase till the said Pellicle scabs off in pretty broad Flakes; which, when the Distemper hath been very severe, happens not, in some Parts of the Face, till the twelfth Day; and I have known it the twenty-eighth.

AND the more severe the Distemper was, so much the more do they incline to a dark Colour, and they are the longer a going off.

I have

I have seen the Face as black as the blackest shining Soot ; and then I believ'd it truly mortify'd.

IN a common milder Sort, as the Pustles of the Face grow (according to the proceeding of their Maturation) rougher and yellower ; so, on the contrary, those on the Hands and other Parts smother and whiter.

ABOUT the ninth Day the Pustles usually attain their utmost Magnitude, and thence gradually maturate and encrustate, and fall off in Scabs by the sixteenth.

WHEN those of the Face and rest of the Body scale off, those of the Hands withering as 'twere, and growing lank and wrinkled, break and run away.

IF the Distemper hath been very extreamly severe, sometimes the Skin of the Shoulders and Back cometh off, so as to leave the Parts raw.

*Of the MOUTH and THROAT.*

NOW in this Stage the Mouth, Palate, and Throat are full of sore Ulcers, and are swell'd up ; the Tongue trembleth, and is stiff, and flaps about in the Mouth like a Piece of Board ; and yet commonly the Sense of Tasting (which I have often wonder'd at) is not lost.

THE Saliva being boil'd up, becomes so viscid, that it hindereth Respiration and Deglutition ; and the Parts being both sore and weak, it can hardly be hawk'd up.

THE Sick is grievous thirsty ; but commonly drinking provokes a strangling Cough, which forceth the Drink thro' his Nose, unless it be stopp'd up with Pustles.

HERE

HERE I propose Fomentations to be used warm to the Throat and Neck, made of Mallows boil'd in Milk; great Care being had to keep off the Air; for if a Cold be taken now it may be mortal.

ONE that was Physician to King *Charles* the Second, order'd a Cataplasm of Figs boil'd to be apply'd to the Throat and Cheeks.

LET nothing that is actually cold, astringent, and repellant come into the Mouth.

LET the Teeth, Gums, Tongue, Palate, and Throat be frequently cleans'd, scour'd, mopp'd, and fying'd, and especially before taking of any thing down.

CONVENIENT Things for this Use are small Beer with a little Butter melted in it, White Wine and Water, or Water acidulated with Vinegar: Or,

℞ *Fol. Vitis (vel Sedi maj.) concis. ʒij. Aq. font. lbjss. ſtent ſimul in frigido per hor. j. Col. (ſine expreſſ. forti) add. Vin. alb. ℥ss. m. pro Collutione oris: Vel,*

℞ *Sal. Nitr. ʒij. Sacch. Saturn. ʒij. diſſolv. in Aq. font. lbj.*

IF the Mouth be excoriated, ulcerated, ſore, and tender, ſharp Things, ſuch as *Sal. Prunel.* and all Acids, cannot be borne; but ſoft Emollient, and Anodyne Mouth-Waters, and Ecclegms, will be pleaſant and uſeful.

℞ *Hord. perlat. Glycyrrh. aa. ʒss. Paſſul. Sol. Cort. inter. Ulmi (vel Arbor. Filix) aa. ʒj. coq. in Aq. font. lbijj. ad ij. in col. diſſolv. Syr. de Mecon. ʒijj. m.*

WHEN the Throat is bad, a Syringe is neceſſary to inject Lotions and Gargarisms ſtrongly and deep into it.

AFTER

AFTER every Syringing, it may be well to order him to swallow a little of the following Lohoch, or some other to the same Purpose.

℞ *Conserv. fruct. Cynosb.* ℥℞. *Syr. Bac. Samb.* ℥j℞. *Ol. Amygd. d.* ℥j. *m. Vel,*

℞ *Conserv. Ros. rub.* ℥j℞. *Cons. fruct. Cynosb.* ℥℞. *Syr. Bac. Samb.* ℥iiij. *m. Cap. subinde cochl.* ℞.

℞ *Ol. Amygd. dulc. Syr. è Rubo Idæo aa.* ℥j. *Confect. Fracast.* ℥j. *m. f. Linct.*

LET him scour his Mouth by chewing a Piece of Toast fopp'd in Beer, and spit it out.

LET him frequently swallow something, tho' it be never so troublesome to him, that a Passage in his Throat may be kept open : If Figs can be eaten, they will open, cleanse, and ease the Passage into the Gullet.

HE may at Times swallow a Ball as big as a Hazel-Nut of fresh Butter, roll'd up in Sugar and a little powder'd Nutmeg.

IF the Throat be not extreamly sore, yet be fill'd up with Slime and putrify'd Pocks,

℞ *Syr. Alth.* ℥iiij. *Sal. Prunel.* ℥iiij. *m. detur cochl.* j. *pervices : Vel,*

℞ *Oxym. Scill.* ℥ij. *Aq. Cinnam. fort.* ℥j. *m. detur eodem mod. Vel,*

℞ *Gum. Ammon.* ℥℞. *dissolv. in Aceti* ℥j. *col. adde Syr. Pector.* ℥x. *m.*

WHERE the Mouth and Throat are extreamly sore, healing soft Medicines must be prescrib'd.

*Rx Sperm. Ceti ʒij. Vitel. Ov. ʒss. Ol. Amygd. dulc. Syr. Balsam. aa. ʒj. m. f. Ecclegma.*

EPISPASTICS may be apply'd behind the Ears; Leeches may be set on as near the Throat as they can be got to take; letting Blood under the Tongue, if it be possible to be done, may be likely to bring good Relief, where the Throat is much inflam'd.

I am perswaded that Glystering or Purging in this Case may be of great Use.

DR. S. tells us, that if the Patient hath been treated as he ought to have been, there will be but little need of Gargles.

BUT when it is come to this pass, that he is in Danger of being choak'd every Moment, and becomes quite stupid, and his Breath is almost gone, and he seems to be at his last Gasps,

THEN hath he very seasonably and very successfully given a Vomit of Infusion of Crocus Metallorum, but in a large Dose, viz. ʒjss. for because of the extraordinary Stupidity which the Patient labours under, a less Dose will not work at all; and in the mean time, by disturbing the Humours which it cannot carry off, it will put the Patient in great Danger of his Life.

NOR can we (continueth he) confidently depend upon this Remedy, and indeed some other surer is wanting that may vanquish this Symptom, which alone destroyeth almost all that die at this Time.

BUT

BUT as to my own Part, I look upon it as an audacious Attempt to give a Vomit in this dismal Extremity. I have heard of its succeeding most lamentably ; and I never was hardy enough to order one, and that not only upon point of Discredit that might follow, but even of Humanity itself, and Tendernefs of Heart, which telleth me, I must rather let a Man die than directly kill him.

INSTEAD of this most dangerous and scandalizing Vomiting, I propose (besides the 'foresaid Collutions and Fomentations) the following Artifice.

WHEN the Throat is so choaked up with Slime, and hard-baked Phlegm, together with variolous Corruption, and loosen'd Pustles, that nothing can pass,

Tie a little Piece of Sponge upon a pliant Whale-bone, of a convenient Length, or a bending Stick, so fast that it will not easily come off; and having dipped it in Oil, thrust it down into the Oesophagus, and work it up and down hard enough to remove the Knot, or to break the ripe Pustles, and open a Passage.

IN great Extremity, and Struggle for Life, this will (*tanquam Deus in Machinâ*) instantly bring Relief.

To something like this Purpose I was told by a Lady, that being call'd up in the Night to her Child's Nurse, and finding her strangling and dying, she, in a Fright, caught a Candle out of the Maid's Hand, and thrusting it down the Woman's Throat, broke an Impostume which then chanc'd to be ready, and ripe, and so saved her Life.

## Of SALIVATION.

**H**AVING spoke of this a little before under its proper Head, I shall here only add the following:

WHEREAS in the former Stage of Augmentation, I recommend Incrassants to blunt the sharp Edges, and correct the Acrimony of variolous Particles, and dispose them for Maturation; I now, in this Stage, when Pus is actually made, or is in good Forwardness thereunto, and the Disease is arrived to such a State, that Putridity is more to be regarded than Acrimony, wholly forbid them, lest they hinder the Ptyalism, and running off of the Saliva, which at this Time, tending to Thickness of itself, may very easily be quite stopt.

IN their Room, I advise a liberal Use of Diluents to increase the serous common Vehicle, and to produce a new Supply of Matter for the Swellings of the Face and Hands, which ought to succeed Salivation.

AND also such Drinks as attenuate, incide, and liquify clammy, fizy Lymph; together with such as, without much heating, bear outwards: as the following. (I am inclined to believe, that our *Viciæ* are much preferable to the *Lentes* of the Ancients).

*Rx Passul. sol. ℥iiij. Viciar. contus. ʒ℥. Rad. Contray. ʒij. coq. in Aq. font. lb. iiij. ad ij. col. add. Aq. Raph. comp. ʒij. in singulis dosibus addi possint Sp. Sal. Armon. gt. aliquot, si res postulaverit.*

*Of the SWELLINGS.*

**W**HEN the Pustles are all come out, on the fourth Day, the Emanation of variolated Steams must go on (as elsewhere said) even to the very End of the Disease: And this should begin on the fifth Day, causing, by degrees, the Bases of the Pustles, and Spaces between them to inflame, look red, swell, grow sore and tender.

BUT sometimes, by reason of a too cold, or a too hot Regimen, they will not come to any Colour at all.

AND sometimes, because of the unnecessary Bleeding, Vomiting, Purging, Diarrhoea, or Sweating, even in the Distinct Sort, the Face, in the Progress of the Disease, will not swell at all, but becometh flaccid, and tho' the Pustles themselves stand up high, and thick enough, yet the Interstices appear pale and flat. This is really very dangerous, as betokening, that Nature fails, and cannot go on with her Work of Expulsion without Help, and therefore must be assisted with either Refrigerants, or comforting Cordials, according as the different present Case requireth, never forgetting Purgatives, which are almost in all Cases beneficial.

IN the Distinct Small-Pox, this Inflammation, Colour, and Tumour should sink away the eighth Day.

BUT in the Confluent, tho' it manifestly abate on the tenth or eleventh Day, (and by no Means should do so before that Time) yet it continueth swelling, distending, throbbing, and making sore all the Body, throughout the whole Course of the several Stages, and goeth not off but with the second Fever, on the twelfth Day, unless it be a kindly Confluent; and if it remain not a little after Salivation be ceased, it portends much Danger.

AFTER the Face is gone down, the Hands and Fingers swell more or less according to the Number of the Pustles, and Quantity of variolated Matter in the Blood ; and after them, the Feet ought likewise to swell.

THESE Swellings are as necessary as even the Pustles themselves, and are to be kept up and promoted at last, by drinking freely Small-beer, or the like diluting, attenuating Liquors ; (which may correct Sizyness, and increase Serum) and also, by a due Use of Paregorics, and by keeping the Hands in Bed.

### Of PHLEBOTOMY.

IT is a very nice Point to judge of Phlebotomy at this Time ; for by reason of the great Evacuations made in the Process of the Disease, it is not at all probable, that there can be any *Plethora ad vires* ; and therefore, taking away of Blood will not be needful upon that Account.

AND also, the Spirits being now much spent, and brought low, must, upon Loss of Blood, be in Danger of failing, and fainting quite away, without Recovery.

MY Opinion therefore is, that nothing can require and justify this Practice, but dangerous Inflammations, and mere Necessity : But yet, tho' I scarce dare advise it, I cannot forbear proposing of it to the Consideration of Physicians.

FOR I declare, I have seen it made use of, with almost miraculous Success, the twelfth Day, in a Case that seem'd hopeless : And Sir *Theod. Mayern* tells us, that where he found (in Maturation) quick, short, and painful Breathing, with Danger of Suffocation, or vehement inflammatory Swelling (almost like an Erysipelas) in the Head, he immediately,

immediately, without Delay, put Leeches behind the Ears, or to the Jugulars ; or he opened the Ranular Veins, which would sometimes pour out a marvellous Quantity, even to four Pounds, of over-heated Blood.

H E saith, he took from the Countess of *Bedford* 3xx. and from the Countess of *Salisbury* 3xij. and thereby saved their Lives : And besides these, he could (he saith) mention many others.

B L O O D may also be taken away by Cupping, and Scarifying.

B U T if the Sick be one, who, in former Times, used to faint with Bleeding, we must be very cautious how we advise it, lest such a Fit, in this Time of Weakness, carry him quite off.

*Of* C O R D I A L S.

I F there should be a Necessity of rousing up, and comforting the Spirits, such Things must be avoided as have any great Heat and Force ; as to Wine, hot, spirituous, or aromatic Cordials, Alexipharmacs, and Antidotes, so call'd, I look upon them, in this Case, as no better than Poisons, for they will flush up the Fever to the highest Pitch, and cause Vigils, Phrenzy, Convulsions, Coma, and the like mortal Symptoms.

W H E R E A S I before seem'd to scruple the Exhibition of volatile Salts, because I suspected they would render the variolous Particles more intensely acrid and fierce : I now (their Acrimony being cicurated, and mollify'd into soft Pus) approve of them rather than vinous Spirits and Aromatics : For these Salts revive the Spirits, when almost dying, but the others heat and exagitate the Blood which was burning, and enormously tumultuating before.

IF in the laſt Days, the cruel Conflict hath havock'd the active Principles and Spirits, ſo as to have left the Sick but juſt alive, I propoſe for the Intent of opening the Pores of the Cortex Cerebri, and the generating a new Stock of Animal Spirits, to give Ambergrife, and the Odo-rata. Concerning which, ſee what I have offer'd before, under the Head of Cordials. In good Earneſt, I wiſh this Practice were diſcreetly experimented.

IF Faintneſs, or ſick Fits call for ſuch Things as may by their Warmth comfort the Stomach, and thereby cheer the whole nervous Syſtem, ſuch as Cordial Waters, &c. it were adviſeable to allow only ſuch ſmall Doſes, as may exert all their Efficacy in the Stomach, and raiſe an Ovã-tion there; and not in ſuch a Quantity as may paſs into the Blood, to exagitate and inflame it more: I would therefore give but one ſingle Spoonful at a Time, of *Aq. Ment. Cinnam. Abſint. C. &c.*

PERHAPS, thin weak Chicken, or Veal-Broth may now be allowable; I know not but that Chocolate may be ſafely taken to pleaſe the Stomach, and nourish the impoverished Blood.

### Of PAREGORICS.

IN regard the Spirits are continually irritated, and driven into exorbitant Startings and Leapings, and put by their Buſineſs, Paregorics are ſo abſolutely neceſſary in the high Flux, that the Patient cannot poſſibly ſubſiſt without them.

BUT becauſe the Spirits are ſo ſpent, waſted, and weak, that they have much a-do to keep Rank, and do Duty, the Doſe of the Paregoric had need be moderated,

rated, and so rightly adjusted, as will serve but just to pacify, and not to overpower them.

AND continually all along, as it is observ'd, that the Force of one Draught wears off, another must constantly, without Delay, be given.

I press this as a Matter of the highest Consequence, for if the Recruit of Paregorics be omitted, and the Opportunity lost, in an high Pox, it is to be fear'd it will never be recoverable any more.

SEE more above, under the Head of Paregorics.

*Of EPISPASTICS.*

**T**HOUGH I utterly disliked Epispastics at the Beginning of the Disease, (as aforesaid) for Reasons there given; yet towards the latter End, when the Acrimony of the variolous Matter is now mollified, and ripened away, I declare them, in a high Confluent Small-Pox, most absolutely necessary;

1. To rouse up the drooping Spirits, and give them sufficient Vigour to bear the Weight of Narcotics, which, in this their weak Condition, they could not well do without them.

2. To prevent variolated Matter from running into, and settling in the Brain; which would produce Inquietude, pertinacious Vigils, Delirium, Spasms, Coma, &c.

3. To drain hot, corroding Serum (when apply'd between the Shoulders, or behind the Ears) off from the Glands of the Mouth and Throat; and by that Means succour and ease those inflamed Parts, upon the going away of Salivation.

4. To

4. TO serve as additional Sewers, for the more plentiful Evacuations of the noxious corrupted Serum, when the Salivation is ceased, and the Swellings of the Head, Face, and Hands suffice not to carry out enough.

FOR, if about the eleventh, or twelfth Day, Salivation ceasing, and the Swellings of the Face sinking a very little after, Nature proves not able to overcome what is yet left in the Blood, and to thrust it out into the Hands, making them puff up and swell :

OR, if a great Flow of Urine happen not at that nick of Time :

OR a slight Diarrhœa, at least a Stool or two, either come naturally, or be procured by Medicines, come not at, or before that Time, in a very bad Confluent Sort :

IN such Cases, all the Evacuations we can make by Epispastics, or other Ways, will be little enough : And if they suffice not to bring Help, the Sick will be in Danger of dying the twelfth Day.

OR, if he survive that Day, at which Time the Blood ought to have been fully discharg'd of the morbose Matter, and freed from the Fever, it is to be expected, that the remaining putrid, inanimate, and most virulent Particles, and Moleculæ, will be boiled a second Time into the Mass, so intimately, and fixedly, as never to be fetched out any more ; but lying in its inward Substance, as a powerful Poison, and vehement Stimulus, will begin a new putrefactive Ebullition, being that I call the Third Fever ; and will also assimilate more to it, and mix it in with the rotten Pus that had been cast out some Time before, and so burn up the Sick, utterly poison him, and kill him the sixteenth or twentieth Day, or, perhaps, in a few Days after.

To sum up what I would say, in an ardent and virulent Small-Pox, I most earnestly advise an Epispastic on the eighth Day, in order to meet the Second Fever; which is expected to make an Invasion about this Time, or soon after.

AND where it is found necessary, I appoint a Supply of them the ninth and tenth; that they may be in full Force the eleventh and twelfth, those great decisive Days.

ALL the Time of the Epispastics, it will be needful, that the Patient drink liberally, especially Emulsions, with *Sal. Prunellæ* dissolv'd in them: Or he may take Camphire made up into Pills.

### Of PURGING in the Second FEVER.

I Have sometimes observ'd, that when a Stool hath happen'd about the ninth, or tenth Day, it hath given signal Relief, eased the Sick, and considerably allay'd the Fever, and its Symptoms.

BUT Nature knows its own Times better than we do; and therefore Salivation being now upon decreasing, if it should so happen, that the Swellings proceed not as they ought, we had need be infinitely cautious in the Matter of Purging, lest we hinder the last and finishing Effort of Nature by Tumefaction.

As to my own Part, I own I dare not venture to Purge, or so much as order a Glyster, before the ninth Day, where a Diarrhœa hath broke out before the said Time; if it could not be stopt immediately, I have seen it fatal: However, where one single Stool hath chanced the seventh, or eighth Day, if it had Consistence enough to retain Figure, it hath done much Good.

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BUT before the ninth Day, I have heard where Purging hath prov'd fatal; for immediately upon the Evacuation, the morbid Matter went in, the Pustles grew ill-colour'd, the Swellings sunk, the Spirits fell, and could never be rais'd any more, and so Nature gave up all.

NOW where it plainly and undoubtedly appears, that the Intestines are by this time full charged, stuffed up, and overstretch'd with Excrements, causing Gripes, Wind, Inquietude, Watching, Fever:

AND also where these Excrements, by lying long, being corrupted, and tainted with variolous Matter, grow so abominable and offensive to Nature, that she can no longer endure them; then (that is about the tenth Day) it will be needful to relieve her, by taking away some Part at least of the Burthen.

BESIDES this Use of disburthening the Belly, there is a Second, and that a very considerable one, namely, of forcing out of the Blood, and attracting into the Guts, and thence carrying off the variolous Substance itself, and putrify'd Matters, and by that Means of directly curing the Fever, by subtracting its very material Cause.

I took this to be a new Notion, till I found the following Passage in *Fontanus's* Annotations upon *Dodonæus*, Cap. xxxi. p. 103:

*Si debeat*—— If it should be expedient to give a Purge, it must be only in the Declination of the Small-Pox, that that Part of the foul Blood, which could not be expelled thro' the Skin, may be evacuated by Stool.

DR. S. indeed, acts cautiously, and forbids Purging till the latter End of the Disease, that is, till the thirteenth Day, or after; and is not for it then neither, unless Phlebotomy

tomy were used at the Time when the second Fever made its Invasion.

BUT, *Dies diem docet*. The Practice of Physic is always capable of further Discoveries: The late celebrated Dr. *Freind* adviseth Purging on the ninth or tenth Day, and giveth many Instances of surprising happy Success therefrom, which will deserve to be thoroughly consider'd.

HERE the Physician must diligently observe; and if he find that upon the procuring of a Stool, Salivation manifestly decreases, or the Swellings sink too soon, he may in no wise proceed any further in Purging as yet.

I take a Suppository, which only irritateth the Anus, or a Glyster, which passeth not beyond the Valve of the Colon, to be more safe at first than a Purge, which raketh all along the whole Tract of the Intestines.

FOR all that we should aim at, the first Time, is only the Removal of some of the lowest Excrements in the Rectum, to the End that those which are higher may have Room to follow after; and thereby the uneasy Distention of the Guts may be remedied.

I am fearful of direct Purging as yet; but, when a Laxative is requisite, we must take Care to chuse such an one, as hath no biting, fermentative, griping Quality; that will not painfully provoke the Guts, nor strongly attract Humours out of the Blood, nor increase the Febrile Commotion; but only such as will but just soften the Excrements, quicken the Peristaltic Motion, and rather gently press than roughly cast out the Contents.

BUT because (as Dr. *S.* observeth) the many Narcotics given may something dull the Sense and Action of the Intestinal Fibres, it will be needful to give these gentle Laxatives in pretty large Doses, and repeat them, till they are found to do their Business.

AND constantly after their Operation, a Paregoric strong enough to allay, and perfectly quiet all the Disturbance raised by the Medicine, must in no wise be omitted.

I have, with desired Success, given *Mannæ* ʒjss. dissolved in Water-Gruel, the tenth Day; and when it hath not operated, I have repeated the same the eleventh: and if it worked not then neither, I have the same Afternoon order'd a Glyster of Water-Gruel, Butter and Sugar.

*At the End of the DISTEMPER.*

WHEN the Small-Pox is over, and most of the Scabs are now dry, and falling off, Purging (after Bleeding) must not be neglected; especially in the fluxing Sort; and the more severe the Distemper was, the more, and oft'ner must the Patient be purged.

ONE Reason of Purging is, to cleanse the Intestines of such stercoraceous, bilious, and pancreatic Excrements, as have been collected, and shut up there all the Time of the Decumbiture; and also of such variolous, and other Matter as hath been daily flung out of the Blood and deposited there: These Intentions may be satisfied, perhaps, by two Purges.

BUT the main Thing of all is cleansing the Blood, which the Small-Pox had very much deprav'd, (as is before said under the Head of the *Third Fever*) and turned into adust, noxious Humours, which being unfit for Circulation, are commonly seen to break out in Botches, and Boils, after this Distemper.

FOR this last Intention, there will be requir'd (after a bad fluxing Sort) a Continuance of Purging for some considerable Time.

AND,

AND, together with this, there ought to be intermix'd such Alteratives, as by diluting, and edulcorating the Mass, dissolving morbose Concretions, and opening the Glands and Excretory Ducts, may depurate the Blood, and re-settle it in a sound State.

SUCH Cathartics as painfully vellicate the intestinal Membranes sharpen the Serum, inflame the Globules, ferment the Mass of Humours, dissolve the Crasis of the Blood, and, perhaps, leave unwholsome Particles, and ill Impressions behind them, namely, Colocynthis, both the Hellebores, Gamboge, Elaterium, Turbith, Esula, I utterly dislike them for this Use.

I will venture to say, that I suspect Aloes also, if it be given long; because, whereas the Blood ought to be cooled and mended as to its Consistence, this sharpeneth, heateth, and thinneth it, sometimes to that Degree as to cause Hæmorrhagies.

I advise giving at first a direct Purge or two, to drive the Excrements out of the Guts.

℞ *Extract. Rud. gr. xv. Calomel. ʒss. Scammon. Resin. Jalap. aa. gr. iiij. Ol. Junip. gt. ij. Elix. Propr. non acid. q. s. f. Pil. vj. pro una dosi matutina.*

THIS done, it may be good to drink the Purging Waters, or the following Diet-Drink.

℞ *Rad. Oxylap. lbj. Rub. Tinct. ʒiiij. coq. in cerevis. mediocr. novel. Cong. v. ad iiij. col. in doliol. reposit. suspend. saccul. ax. Senæ ʒiiij. R. Rhabarb. Curcumæ aa. ʒj. Bacc. Junip. ʒij. Passul. sol. axacin. Limat. Chalyb. aa. lbj. simul fermententur.*

To edulcorate, and depurate the Blood.

℞ *Rad. Sarsap.* ℥ij. *coq. in Aq. font.* lbiiij. *ad ij. col.*  
*calida affundatur super Herb. Hepat. Contus. ℥ij. stent*  
*simul per hor. 8. deinde col. (per cribrum sine Expres.)*  
*edulcoretur cum Syr. Balsam. ℥iiij. m. Sumantur ℥iiij.*  
*omni nocte cum Pulv. seq.*

℞ *Antimon. crud. 3℔. Æthiop. miner. ℥iiij. Gum. Guaic.*  
*3j. f. omnium, pulv. in viij. Doses Dividend.*

### Of the PETECHIAL, SCARLET, and BLEEDING SMALL-POX.

AS all Quicksilver is of its own Nature the very same, and yet by different Preparations, and Mixtures with other Things, turns into Substances perfectly different from each other:

EVEN so (my Opinion is, that) tho' all variolous Matter be essentially the self-same, yet, according as it is diversly heated and modified by particular Constitutions, Management, and Medicines; and according as it is admixed and compounded with Particles sent into it out of impure Air, it produces the Diseases, integrally differing as to Symptoms, Danger, Duration, that require peculiar and respective Care and Cure.

I reckon'd up before four Sorts of Small-Pox, 1<sup>st</sup>, The Distinct. 2<sup>d</sup>, The Contiguous. 3<sup>d</sup>, The Confluent. And 4<sup>th</sup>, The Bleeding Sort.

HAVING treated before of the three former: I come now to the fourth, namely, the Bleeding Sort.

IT seems to me, that the Confluent Small-Pox was not much known to our Fore-fathers in Physic; and though there

there were some Hints of it sprinkled about in some Authors, yet none ever handled it distinctly, & *ex professo*, till our great *Sydenham* did it.

AND yet *Rhazis* appears to have apprehended something of Salivation, and Bloody Urine; for he saith,

“IT is necessary to forbear such Medicines as stop Spitting, because thereby Respiration would be hurt, and a malignant Flux would follow, and Bloody Urine; as it happened to the Son of *Enbede*:” But since him, I remember not to have seen any Thing considerable in any Author upon this Subject, till *Hoecstetter*, who an hundred Years ago publish’d some Observations of Bleeding in the Small-Pox, which (in my Thoughts) he had not a very clear and distinct Notion of neither. These I shall insert by and by.

AND from his Time, all our Physicians that take any Notice of it at all, do it in so slight a Manner, that we may easily see, they had not much been acquainted with it.

*RIVERIUS*, indeed, *Observat.* 71. tells of a Child of five Years old, who having the Small-Pox, voided the third Day a great deal of Blood by Stool: He saith, it was the only one that he ever saw in that Case that recovered.

HE doth not mention any Spots, or Efflorescences breaking out with it; and therefore I am persuaded it was not the true Bleeding Sort.

HE speaks of Sincere Blood issuing from the Nose, Gums, by Stools, Urine, and from other Parts of the Body; but I suspect he never saw them, because he so faintly pronounces, *Lethalis sæpe esse consueverunt*; They often use to be mortal: But of bloody Urine, he saith roundly and positively, *Signum est lethaliissimum*; It is the most

most deadly Sign that can be : But he wrote scarce any thing more of this Small-Pox.

I observe scarce any thing of it in Dr. *Morton* ; and *Sydenham* himself, tho' he declares it a mortal Sign, and treats here and there a little of it, yet he no where gives us a particular full History and Description of it, as, no doubt, so accurate and observant a Person would certainly have done, if ever he had seen it himself, therefore it is likely he had his Knowledge of it only by Hear-say ; and in those Times it was not common.

BUT whatever can be the Cause of it, we have the Bleeding Small-Pox now in our Days frequently ; and I myself have too often met with it : And now because no one hitherto hath done it, I will endeavour to recount such Apparatus and Symptoms of it, as I have observ'd myself.

IN order to illustrate what I am to say upon this Subject, it will be convenient to look back to what I have before wrote in my Section of *Globules* concerning their Minuteness and Divisions ; and also concerning their breaking and causing Hæmorrhagies in my Section of *Eruption* : And for the better apprehending of this, I think it not amiss to relate some Particulars of Bleeding in other Cases.

### Of divers HÆMORRHAGIES.

THE Serpent *Hæmorrhous*, where he biteth, is said so to break the Contexture of the Blood, as to make it to run out of the Nose, Mouth, Ears, Corners of the Eyes, Roots of the Nails, Privities, Fundament, Lungs, Stomach, and the Pores of the Body ; and withal, to produce Difficulty of Breathing, Micturition, and Stoppage of Urine.

*ARISTOTLE de Partib. Anim.* speaks of bloody Sweats. *Galen (5 Meth.)* mentions the same.

*RONDELETIUS de Dignosc. Morb. C. 11. p. 684.* saw a Student that bled thro' his Pores all the Body over.

*FERNE L. de Morb. L. 6. C. 4. p. 137.* tells us, he hath sometimes observ'd it issue thro' the Skin in many Parts.

*FONTANUS* in his Notes on *Dodonæus*, p. 135. speaks of Blood flowing out of all the Parts of the Body, the Mouth, Lungs, Stomach, Hæmorrhoids, &c. and quotes *Galen* for it.

*BENIVENIUS Obs. 4. p. 207.* saw a Man who, at stated Seasons, used to bleed from an invisible Aperture about the lower Part of the Liver, to a Pound at a Time; and then it would stop, and afterwards return again.

In the *Philosophical Transactions* we have the following strange Accounts.

NUMB. 109. p. 193. A Child of about a Quarter of a Year old was taken with a Bleeding at the Nose and Ears, and hinder Part of the Head, where there was no Sore; this lasted for three Days, and then the Nose and Ears ceased Bleeding, but still Blood came as it were Sweat from the Head: The sixth Day she died; but three Days before, the Blood came more violently from her Head, and streamed out to some Distance; she bled from the Shoulders and Waist such Quantities, that the Linen was so wet, that it might be wrung out: She, for three Days, bled also at the Toes, at the Bend of the Arms, at the Joints of the Fingers of both Hands, and at the Fingers Ends so much, that in a quarter of an Hour the Mother hath caught from the Droppings of the Fingers almost as much as the Hollow of her Hand could hold. After the Child was dead, there appeared in these Places, whence

the Blood came, little Holes, like the Prickings of a Needle; the Blood was not thin like Water, but of that Thickness as Blood usually is.

NUMB. 271. *p.* 989. *Walter Walsh*, a temperate, but sanguine Man, of 43 Years of Age, was seized about *Easter*, with a great Pain over all his right Arm, a great Heat and Redness in his right Hand, and a Pricking in the Point of his Fore-finger; whereon there appear'd a small Speck, as if a little Thorn had run in there.

AND supposing it such, he open'd it, whereupon the Blood span out in a violent, but a small Stream; after it had spent its Violence, it would cease for a while, and only drop, and then spring out with Violence again, continuing thus for 24 Hours, till at last he fainted away, and the Blood stanch'd of itself, and his Pains left him.

FROM that Time, during his whole Life, (which continu'd 12 Years) he was frequently troubled with the like Fits, seldom having a Respite of two Months; and they never return'd oftener than in three Weeks: He rarely bled less than a Pottle at a Time.

WHENEVER they endeavour'd to stanch the Blood, it rais'd most exquisite Tortures in his Arms: No Remedies that ever were used prov'd in the least effectual: He had no other Distemper; neither Season nor Weather wrought upon him any Change.

THESE frequent Fits brought him at last very low, inasmuch, that towards the latter End he bled but little, and that too was like Blood diluted with Water. He dy'd of this Distemper.

NUMB. 208. AN Icteric Woman had an Eruption of Blood out of the Glandula Lachrymalis of one of her Eyes, without any external Injury: She bled two Pounds within  
the

the Space of thirty Hours; about a Week after, the same Flux return'd again, and she bled till she dy'd.

I myself saw a Trooper, who, upon making himself drunk almost to an Apoplectic Fit, with a great Quantity of Brandy, fell into a very deep-colour'd Jaundice; and, after some Time, the Blood burst out at his Nose, and continu'd flowing till he dy'd.

A very temperate, sober and good Clergy-man, under forty Years of Age, this Spring, 1728, had a Pimple on his Face, which he scratched off, and fell a bleeding from that Place, till he bled out all his Blood, no Remedy that could be used being able to put a Stop to it.

*ZACUT. LUSITAN. de Praxi Mirab. Obs. 41.* gives a Relation of one in the Pestilence, whose whole Habit of Body being livid, had bloody Sweats all over for two Days; and, before he dy'd, came out every where with perfect black Tubercles.

AND, *Obs. 42.* he saith, many in the Plague that were cupped and scarified, bled so that it could not be stanch'd by any Means; and they all dy'd.

*SCHENCH. Lib. 6. de Variolis, p. 842.* out of *Dodonæus*, speaks of one at the Time of coming out of the Ecthymata, bled out of his Gums, and when that was repressed, he made bloody Urine; and when that was also stopped, the Gums bled again, and so one or the other continued till the Ecthymata were cured.

*SCHENCH. p. 842.* quotes *Leovinus*, saying, We saw a little Boy, who having grievous Exanthemata out upon him, voided bloody Urine for some Days, and dy'd.

*GARCIAS LOPIUS* reporteth, that he hath seen several that made bloody Urine, and dy'd: He particularly mentions one of about seven Years old, whom he

was call'd to the Seventh Day, and found his Face, Breast, and Stomach, all full of Lead-colour'd Pustles; he made bloody Urine, and dy'd.

IT is an Opinion, that a bilious inflammatory Constitution, and a Blood made thin, harsh, and acrid by constant Wine-drinking, salt and spicy Diet, and a sottish Way of living, dispose Men to this Sort of Small-Pox:

AND that an over-hot Regimen, giving of high Cordials, laying the Sick in a Sweat, &c. at or before Eruption, bring it into Act.

BUT I cannot wholly come into this; forasmuch as I am well assured, that Women who live temperately, and easily, are as subject to it as Men; and Children, whose Blood is usually soft and sweet and balmy, are as liable to it as Adults: Of both these I have seen many Instances, tho' more of Children than of Women.

THEREFORE the Causes of this Small-Pox are as to me occult; perhaps its Matter may be extraduce, a particular paternal, unexplicable Thing: for I have known some Families, where almost all of that Blood fell into this Sort when they had the Small-Pox.

SOMETIMES it seemeth to come from the Air, for in some Epidemic Anomalous Seasons it hath been much more rife than in others.

BUT it is very often chancing, and happeneth where we cannot so much as guess at any Cause of its coming.

EVERY single Purple Petech in this Distemper consisteth (in my Apprehension) of one or more sanguineous Globules, and a variolous Atom combined with it, and forming it into a Molecula.

AND

AND where-ever these Petechiæ or Efflorescencies appear, it is most certainly this bleeding Sort of Small-Pox, tho' till the Globules become more broken, it is in a lower Degree, and rises not up to actual Hæmorrhagies.

*The MANNER of Coming, and the SYMPTOMS of the Bleeding SMALL-POX.*

1. **T**HEY always begin exceeding fiercely from the very first Invasion, with convulsive shooting Pains in the Loins, which are as violent, sharp, and intolerable, as even the worst Nephritic Tortures; insomuch, that at every spasmodic Shoot the Sick cannot help crying out, starting and leaping, jerking and tumbling about in his Bed.

THIS Pain, as here describ'd, is plainly distinguishable from that in a common Small-Pox, (which is constant, without spasmodic Shootings) and is a never-failing Pathognomic Sign of a very bad, if not the Bleeding Small-Pox.

SINCE *Bezaleel* and *Aholiab* (as we have it, *Exod.* xxxiv. 32.) were enabled by the Spirit of God, to devise, and work upon Metals, Stones, Wood, and Linen, which was a meer mechanical Matter, perhaps we may (without Prophaneness) allow *Hippocrates* to be qualify'd by heavenly Inspiration, for the finding out the Nature and Cures of Diseases, in order to succour poor miserable Man; which is so supremely noble a Business, that even our Saviour and his Apostles practis'd it.

THIS divine old Man, tho' he never saw, nor so much as heard of the Small-Pox, yet being endued with an universal medical Knowledge, hath left us the following Paragraphs wonderfully apposite to our present Purpose.

*Lumborum*

*Lumborum Dolor, absque causâ manifestâ, crebrò invadens, Morbi malignitatem indicat. Coac. Sect. 322.*

A Pain in the Loins, without any manifest Cause, (either Stone, or Strain) often (by Shoots) invading, shews the Disease is malignant.

*Ex Lumborum dolore, liberales sunt & largæ Sanguinis Fluxiones. Coac. Sect. 2. 307.*

GREAT Pains in the Loins foretel liberal and large Fluxes of Blood. And, *Coac. Sect. 2. 271.* he speaks of Pain in the Back, with bloody Urine.

NOT only Pain of the Back, but of the Head also, and Limbs, if they be vehemently acute, and are not constant, but come with convulsive Shoots, betoken the same.

THE same *Hippocrates* saith, *Prædict. Lib. 2. Sect. 2. p. 89. Omnium maximè terret Dolor, si in Capite, ad Cervicem, & Dorsum pervenit. Eos verò juvari Spes est, si Pustulæ toto Corpore pullulaverint.*

2. THE most frightful Thing of all is, that Pain of the Head, which runs all down by the Neck into the Back; yet there is some Hope of Help left, if Pustles (he doth not say Spots or Efflorescences) break out all over the Body.

3. THE Stroak of the Pulse is weak, and very quick and frequent.

4. BREATHING is wonderfully short, and laborious.

5. THE Eyes are all over Blood-shot.

6. THERE

6. THERE flusheth out upon the Face, Breast, Back, Trunk of the Body, and shortly all over every where a Redness, like that in a Scarlet-Fever.

7. THERE are no elevated, distinct Pustles in the Face, or any where else, but only a flat continued Tumescence.

8. THE Sick live till the Scarlet Efflorescence abate ; an infinite Number of small Petechiæ will every where come in Sight, which were before hid in that red Colour, and these Petechiæ, if the Party dieth not in three Days after Eruption began, turn leaden and blackish.

9. IN the worst Degree of this Small-Pox, I several times have seen upon the Breast, Back, and Face, pretty broad Spots, exactly round, of a very delicate fair blue Colour: These I take to be like the Tokens in the Plague, real Mortifications, and most infallible Harbingers of Death.

10. WHEN the Hæmorrhagies begin, the torturous Pains and other grievous Symptoms go quite off, and the Sick lie perfectly easy, and complain of nothing at all, only their Breath is still very short, and their Eyes all Red and Blood-shot.

11. ALL that I have seen in this Condition, retained (which is a marvellous Thing) their Senses entire, and their Understanding clear, almost as long as Life lasted, and then they died easy and without Pangs.

12. THE Bleedings commonly begin the next Day after the Appearance of the Scarlet Flushings.

13. IN some, they are only from the Urinary Passages ; in some, they come by Stool only, and that easily, and without any Griping, or other Pain ; also out of the Mouth, Nose, Eyes, Ears, Pores of the Skin, and even the Pocks themselves.

IT is a Matter of the highest Concern skilfully to distinguish this variolous Flux of Blood from that of the Catamenia.

THIS is to be done, 1. By observing the foresaid Pathognomic Pains, which are peculiar to this Small-Pox, and never are convulsive, nor so torturous in the Menfes. 2. By the entire going off of the bad and painful Symptoms, as soon as the Hæmorrhagies break out, which they do not in the other Case. 3. By the Blood itself, which cometh away; for, it consisting of nothing but broken Globules and variolous Particles, fallen in together, and becoming a close Thromb, it immediately congeals in the Chamber-Pot, maintaining its solid Consistence without any Portion of Urine or Lymph among it, and always is of a remarkable fiery, bright red Colour.

THESE Purples and Hæmorrhagies have (according to what I have observ'd myself, and heard from others) three Times or Seasons of coming.

THE first is at the Time of Eruption, and then I believe they are generally mortal, few ever escaping.

THE second is at that Time when the Stage of Augment is proceeding, namely, the fifth and sixth Days, and then the Distemper seldom goeth beyond putting out of Purple Petechiæ or Efflorescencies without any Hæmorrhage; if these be of a bright Red, sometimes they will discuss, and by degrees vanish, and the Sick may recover; but if they be of a dark Purple, and grow more and more dusky, leaden or black, the Sick dieth certainly.

BUT sometimes such strange Things occur in Practice, as thwart common Observations, and break thro' Rules. Mr. *Grist* of *Bath* communicated the following Relation to me:

DR.

†

DR. Rogers (a most ingenious and famous Physician at Cork in Ireland) had been with a Child that had a favourable Small-Pox, and then was desir'd by the Mother to give her three other Children something to prevent a bad Sort; on which he bled them, order'd a spare Diet, a Vomit, &c.

FOURTEEN Days after the Bleeding the Small-Pox broke out distinctly, and were regular, and the Pustles came to good Digestion.

BUT on the eighth Day large purple Spots appear'd on the Thighs and Bodies of two of them.

THE next Day one of them discharg'd a vast Quantity of Blood by Stool.

UPON the Purples appearing the Doctor gave *Sal. Prunel. Terr. Japon. Camph. &c.* with some Alexipharmacs, viz. *Coccinel. Croc. &c.* They all recover'd.

THE third is in the Stage of Maturation on the 10th, 11th, or 12th Day; the second Fever being at this Time very high, and Nature low, Hæmorrhagies that break out now are most extremely dangerous, yet perhaps the Evacuation of Blood (if the Spirits can but hold out) may help to assuage the great Ebullition.

RECOVERIES of this Sort I have heard of, and some I have seen myself, an Instance of which I will borrow out of my own *Pharmacopœia extempor.* where I give an Account of a Coachman who, upon the tenth Day of a fluxing Small-Pox, fell into a Phrenzy, and a Bleeding at Mouth, Nose, Eyes, and Ears; his Pocks also bled, and he made bloody Urine.

UPON taking of *Ol. Vitrioli* gt. 40, in a large Vehicle, and repeating of the same half an Hour after, the Blood  
C c c stopp'd

stopp'd every where; anon he fell asleep, awak'd well in his Senses, and in good Temper, and from thence gradually recover'd.

THE Reason of a Possibility of a Recovery at this Time, I take to be this: About the 12th Day, the Small-Pox having run thro' its natural Time and Course, the Spirits something quieting, and the Fever sinking, and the variolous Copula separating, and passing out by Tumefaction and Diaphoresis, Nature by Degrees helps the minute Globules to run together and join again, like the Particles of Quicksilver, into such large ones, as render the Consistence of the Blood fit for Circulation, and the common Uses of Life.

WHEREAS the common Small-Pox (even the worst Confluent) is seldom plainly infectious, till all the Pustles that will, are come out, and the Stage of Augment be-  
ginneeth, that is, the fifth Day; this bloody ferine Sort arrives to an high Degree of Venenosity presently, emits, and spreads virulent contagious Effluvia from the very first Eruption, and perhaps Invasion.

WHEN any one dieth of this Sort, his Flesh corrupts immediately, and grows putrid, rotten, and stinking to such a Degree, that the Corpse cannot be kept above Ground two Days, tho' the Weather be cool.

THE Matter of this dreadful Small-Pox, when it is wrought up to its Height of rank Virofity by the Time of Eruption, is more killing than that even of the Plague itself; for it slays most certainly, without fail; whereas the Pestilence hath suffer'd some to escape.

AT its first Onset it falls directly upon the vital, animal, and spontaneous Spirits, causing weak, quick, and faltering Pulse, short and painful Breathing, Sicknefs, Anxiety, and such exquisite Pains, as human Nature cannot long bear and live.

THEN

THEN it flies presently on upon the Blood, making the Lymph caustic, liquifying the Size, cutting asunder the Fibres, dissolving the Bands of Union, letting the Globules loose, and breaking them into the minutest Atoms.

AND then it joins them Atom for Atom, insomuch that every little Globule is a Compound of Blood, variolous Corpuscle and Poison; and yet they are such inconceivably small Moleculæ, that, like Quicksilver, they can be squeez'd, by the Force of the Fever, thro' every Membrane or animal Substance, and so they find, or make Passage every where, and produce these direful Hæmorrhagies.

THERE are three Degrees of this Sort of Small-Pox.

THE first is, when the whole Mass of Blood is not universally and equally infected and broken, then there come out only purple Petechiæ among the Pustles.

I have sometimes seen Persons upon whom these came out after Eruption was compleated, and kept fresh and red, and yet the Scarlet Effusion came not upon them at all; and some of these that had them not before the Stage of Augmentation, recover'd: But I remember not any that escap'd, where the Spots appear'd during the Stage of Eruption.

2. WHEN the Blood is in every Part of it infected; but tho' its Globules are broken all to Pieces, yet they are not come to their utmost Degree of Venenosity and Putrifaction; in this Case they cause the Scarlet Effusion all over the Skin. This (as that of Spots happening in the Stage of Eruption) is, as far as I know, always mortal, but perhaps may be possibly recoverable, when they appear in the Stage of Augment, and not before.

3. WHEN the Blood is intimately and thoroughly infected, and the broken and the variolated Globules are become so virulent, acrid, corrosive, penetrant, violent, and agile, that they cannot be held and contain'd by any Vessels, Membranes, or Flesh in the whole Body, and at the same time the vehement febrile Commotion rapidly drives them out: In that Case, the gross, as well as the finest Blood, rusheth out not only thro' some of the Pores, as it doth in the Petechiæ, but thro' every other Part and Passage, in great Drops or Streams.

THIS Sort commonly killeth in three Days Time after the Appearance of the Bleeding, and therefore there can be no Room for any Remedies.

BLEEDING or Purging in this Case are not likely to do any good, and where they do not so, will be Occasions of villainous Scandal; yet in the last Stage I have seen Bleeding successful, and know not but Purging may be so likewise, if there be but Strength of Nature enough to bear it.

THE Things here to be thought of and propos'd are, lightening the Bedcloaths, taking out of Bed a little while, setting the Sick at an open Casement.

GREAT Quantities of Drink, Refrigerants, Incrassants, Styptics, Acids, and Paregorics, are the chief Things; and are to be prudently order'd, according as the present Exigents and Cases shall indicate and require, and (something too which I am ashamed to mention) the Nurses will permit.

OBSERVATIONS from HOECKSTETTERUS.

**I**N the Year 1619 a malignant Small-Pox being about, a Boy of seven Years of Age fell sick of it. I was call'd to him the third Day, and finding him very restless, full of Lead-colour'd Pustles, and Spots among them that were at first dusky, and afterwards black, I pronounc'd Death: That Day he became speechless; the fourth in the Morning he piss'd Blood, and twelve Hours after that he dy'd.

1622, I was sent for to a Youth of about 15 Years old. The Pustles were not elevated, and among them were seen many purple and blue Petechiæ, and the very first Day he made a great Quantity of bloody Urine: His Stools were meer Blood: The third Day he spit frothy Blood: The fourth bled at his Nose and Gums: Upon taking an Alexipharmac he was worse. Then he fell into a Leipothymia, Straitness of Breath, Prostration of Strength, and the same Day had two Convulsions, and so dy'd.

1622, A Girl of about twelve Years old fell into a Synoch Fever, with Pain in her Head, Back, and Belly, and with Lassitude every where: The next Day she had some Stools a little bloody, and Spots broke out like the confluent Small-Pox (*variolarum Efflorescentium* are his Words).

I was call'd to her the third Day, when they shew'd me Stools mix'd with Urine all bloody, upon which I instantly gave her high Cordials.

THE fourth Day I repeated the same Cordials, upon which she grew worse; for there thrust out all the Body  
over

*Of the SMALL-POX.*

over Spots, purple, plumbeous, blue : The fifth she spit Blood, and went off quietly.

*E. HAMILTON'S Case.*

1725. *MAY* 19. I was call'd at Night to *Edward Hamilton*, aged about 35 Years, a strong healthy Man, not given to drinking, or any Sort of Debauchery.

HE had been sick at Stomach, and vomited.

HIS Pulse was orderly.

HIS Urine like that of Mens in Health.

HE had no Fever perceivable.

HE slept at Times, but unquietly.

THE Pain in his Head was vehement :

BUT that in his Back came with such outrageous Shootings and Tearings, that he cry'd out at every Shoot, and could not bear it.

HIS Face was all over red, and that Redness was so fix'd there, that when I press'd the Part hard with my Thumb, it would not recede at all.

HE complain'd that his Strength was all taken away at once.

THAT Night the Small-Pox made its first Appearance.

*May* 20. MORE Pocks broke out, but they were extremely small, and not very red, nor elevated.

HIS Pulse, Urine, and Fever not alter'd in the least.

STRENGTH quite gone.

HEAD-ACH something abated, but his Back as bad as ever, or worse.

THIRST unquenchable.

HE took *Diacod.* ʒj. in the Evening, but slept not one Wink.

IN the Night he bled out of his Nose at least two Pounds of Blood.

I prescrib'd as followeth :

*May 21. Dissolv. G. Tragac. ʒiij. in Aq. font. lbij. signetur solutio Gummosa.*

℞ *Herb. Urticæ ʒiiij. concis. & contus. add. Solut. Gum prædict. lbj. stent simul in frigido per horæ quadr. Liquori col. add. Ol. Vitrioli gt. xxiiij. repon. per horam deinde liquor. per subsid. depuratus per colum effundatur.*

*Hujus cap. ʒiiij. tertiâ quâq; horâ.*

THIS put a Stop to his Bleeding at Nose ; but all that Day he hawk'd up out of his Throat clotted Blood.

IN the Evening he bled at Nose again ; but upon taking the following it stay'd.

℞ *Solut. Gum. ʒvjß. Syr. de Mecon. ʒjß. Ol. Vitrioli gt. 48. div. in duas doses, quarum una fumatur horâ 8 vesp. & altera post 4 horas.* This is a very unusual Dose of *Ol. Vitrioli*, but an hard Knot must have an hard Wedge.

Now

NOW the Pain of his Back went entirely off, and return'd no more ; but a mighty troublesome Difficulty of Breathing came on.

A very great Number more of Pocks broke out this Day, not only in the upper Parts of his Body, but the lower also.

UPON taking a strong Paregoric, he slept more comfortably than he had done before.

May 22. NOW an infinite Number of Pocks were seen all his Body over, but they were exceeding small and pale, and many purple Spots were sprinkled in among them.

HE spit up a great Quantity of Blood.

℞ Rad. Sympb. maj. Urticæ aa. ℥iij. coq. in Aq. font. lbiiij. ad iij. col. adde Hord. perl. ℥. Passul. sol. ℥iij. Raf. CC. ℥i. Glycyrrh. ℥ij. coq. ad lbij. in col. instill. Ol. Vitrioli gt. xxxij. m. Cap. haustum subinde ad libitum.

AT this Time he thought himself much better, and seem'd more chearful ; but ever now and then at Times the Blood issu'd out of his Nose and Throat.

℞ Herb. Urtic. ℥iij. concis. & contus. affund. solut. Gum. lbj. stent per horæ quadr. Col. express. divid. in 4 doses, in singul. instillando Ol. Vitrioli gt. xij. cap. tertiâ quâq; horâ.

℞ Herb. Urtic. ℥ij. coq. in Aq. f. lbj. ad ℥xij. col. add. Mel. Ros. ℥iiij. Ol. Vitrioli gt. xxiiij. m. pro Gargar. cum Penicillo, & Syringâ usurpando.

℞ Album. Ov. quassat. & col. Syr. Cydon. aa. ℥j. Conserv. fruct. Cynosb. ℥i. Terr. Japon. Lap. Hæmat. aa. ℥j. m. f.

*m. f. Loboch post singulas Oris Lotiones lingen-*  
*dum.*

HE made Water very often, but his Urine was like that of Men in Health.

IN the Afternoon he had three, not very loose, but stercoraceous Stools, in the Space of an Hour and a half, and these without any Sense of Sickness or Gripes.

UPON taking of the following, this Looseness stay'd ; but in the Night it came once, and after that never any more.

℞ *Diascord. ʒij. Balaust. pulv. ʒj. Aq. Cinnam. fort. ʒ℞. Aq. Lact. Alexit. ʒij. Syr. de Mecon. ʒj℞. f. haust. station. sumend.*

℞ *Pulv. CCC. ʒj. Boli ʒ℞. Cort. Granat. ʒij. Terr. Japon. ʒj. Sacch. alb. ʒj. Aq. font. lbij. coq. ad lbij. col. cap. ʒiiij. quartâ quâq; horâ, vel pro potu ordin. donec refrænetur Diarrhœa.*

May 23. HE slept well.

DIFFICULTY of Breathing went quite off.

URINE the same as before.

FEVER and Pulse moderate : I told 48 Pulses in half a Minute.

HIS Forehead and Cheeks began to swell.

HIS Face, Neck, and Breast were intensely red, and the Redness would not recede upon Pressure with my Thumb.

HIS Face was all over cover'd with one continu'd Pock, without any Distinction of Pustles, like the smooth Bark of a Tree.

THE Pocks in all the rest of his Body were pale.

UPON his Back, Thighs, and Legs they were broad, but flat, almost without any Elevation at all, and looking as tho' each were cover'd with a livid Pellicle ; and their Circumferences had no Redness.

SOME of the Pocks turn'd quite livid.

MANY purple Petechiæ appear'd in his right Arm, and it swell'd pretty much.

NOW first Salivation began ; his Throat grew sore, and he could neither swallow, nor breathe so freely as he had done hitherto.

℞ *Hord. perl.* ℥ss. *Passul. sol.* ℥ij. *Conserv. Ros. rub.* ℥j. *Ras. CC.* ℥ss. *Glycyrrh.* ℥ij. *Aq. font. solut.* Gum. aa. lbjss. col. adde *Ol. Vitrioli* gt. xxxij. *propinetur Liquor ad libitum.*

℞ *Herb. Plantag.* ℥iij. *Sedi maj.* ℥j. *Contus. affund. Aq. f.* lbj. *reponantur per hor. quadr. deinde col. add. Vi-* *trioli* gt. 40.

℞ *Hujus infus.* ℥iij. *Syr. de Mecon.* ℥j. m. f. *haust. horâ* *undecimâ antemerid. sumend.*

℞ *Hujus infus.* ℥vj. *Syr. è Rubo Idæo* ℥ij. m. & *div. in ij.* *Doses, quarum una cap. hor. 2 pomerid. & alterâ 5* *pomerid.*

℞ *Ejusdem infus.* ℥iij. *Syr. de Mecon.* ℥jss. m. f. *haust.* *horâ octavâ vespert. sumendus.*

May 24. His Face was now swell'd up that he could not open his Eyes, and it tended to Blackness.

His Neck and Breast were as fiery red as an Erysipelas.

THE Pustles were all his Body over flat and pale.

SALIVATION was very much increas'd.

HE made Water very frequently, and a little at a Time, but without a Dysuria.

URINE and Pulse as before.

IN the Morning he complain'd not of any Pain, Sickness, nor Thirst.

IN the Afternoon he was inexpressibly uneasy, and sick, and in great Distress and Anguish.

THE Night pass'd with inconceivable Disquiet and Conturbation.

℞ Pulv. CCC. ℥j. coq. in Aq. f. lbij. ad ij. in col. dissolv. Gum. Tragac. ℥ij. col. add. Aq. Cinnam. fort. & Sacch. cand. alb. aa. ℥ij. m. pro Potu ordinar.

℞ Ol. Amygd. dulc. Syr. è Rubo Idæo aa. ℥j. Diascord. ℥ss. m. f. Mist. instar. Loboch.

℞ Syr. de Mecon. ℥ss. Aq. Lact. Alexit. ℥ij. Laud. liqu. gt. xv. m. f. Haust. hor. viij. vespert. sumend.

May 25. NOTWITHSTANDING his Paregoric he had a miserable bad Night; Fever rose up high.

FACE turn'd almost black.

MOST of the Pustles in his Body turn'd livid, and flaccid, and shrivell'd.

EVERY thing grew worse to Extremity.

AT Night Death would not be stav'd off any longer.

I prescrib'd but one Cordial in all the Sickness, and I think he took none of it.

HE was not let Blood, Vomited, nor Purged before he fell sick, the Distemper catching him at unawares.

I saw him not till that Evening when Eruption happen'd.

I had not Permission to bleed him after the Pocks appear'd, and if I had, I should not have been very forward to have done it; for in such a Case as this was like to prove, it doth the Patient Good never, but the Physician Hurt always.

HIS Spirits were struck down and ruin'd at the very first Assault, and never could be rais'd or recruited any more; and so he complain'd of strange Loss of Strength all along.

FOR this Reason, Nature being not able to make a Struggle, there was no sensible Fever, nor remarkable Heat or Thirst all the Time.

THE Pulse also and Urine were not alter'd.

THAT the Globules and the Contexture of the Blood were broken and dissolv'd, manifestly appeareth from the coming out of the Purple Spots.

THIS was the true Bleeding Small-Pox, with Petechiæ, Hæmorrhagies out of Mouth and Nose, tho' not by  
Urine

Urine nor Stool, by reason of the vast Effusions of Blood in the upper Parts.

BUT the Bleedings being several times restrain'd and stopp'd by those unusual great Quantities, and frequent Exhibitions of Acids, Incrassants, and Paregorics, it kill'd not so soon as this terrible Sort useth to do.

FOR the Hæmorrhagies began *May* 20, and he dy'd not till the 25th, which Time includeth six Days; wherefore as I never before nor since saw any one taken with this Sort at the Time of Eruption, that surviv'd the third, or at most the fourth Day, I thought proper to be the more particular in this Case.

*Of PRESERVING and CURING the FACE.*

THE Manner of Pitting the Face is thus: When the Scabs fall off, there is no Cavity at all to be seen, but a Scurfiness succeeds, which peels away, and renews again several times, and at last leaves Pock-Holes.

I am of Opinion, that now when the Distemper hath quite run thro' all its Stages, and is gone off, these Scabs do not contain a sharp Humour that consumeth the Flesh under them then.

BUT the Mischief is done before, and that by the second Fever, which turns the Abscesses into eating Ulcers, and those shallower or deeper, lesser or larger, according as the different Degrees of Virofity and Heat had made the Matter more or less corrosive.

WHERE the Ulcers stand singly, they cause Pits only; where they run into one another in broad Area's, they leave Scars and Seams, as Burns do.

THE Reason why no Cavity appears when the Scab first falleth off, is, because the little Portions of Flesh  
under

under them, that have been lately inflam'd, remain as yet swell'd up in them :

BUT afterwards, when the Face groweth well, and those Swellings are sunk, where-ever Flesh was eaten away, Pits must be left.

THE Pits are eaten in thro' not only the Cutis, but even into the Substance of the Flesh also.

IF there be a great deal of morbose Matter assimilated, and the second Fever be carry'd up high, the Ichor will proportionably be more caustic, and will eat in the deeper.

THIS Causticity continueth increasing till Maturation be perfected, and then, as soon as ever the Ichor is turn'd into laudable thick white Pus, it ceaseth to be any longer caustic ; hence it followeth, that the Cavities are eaten in only during the second Fever, and that too before Suppuration be entirely made.

IF new Flesh generate in these Cavities, and fill them up full, it will prevent Pits.

THE new Flesh which is to fill them up, groweth from the Time that the Pus is perfectly made, till the under Sides of the Scabs grow dry, and the Skin riseth to cover and coat it over.

IF the growing of the Flesh cease before the Cavities are fill'd, or if the Cavities are eaten in so deep, that they cannot be fill'd before the growing Cutis put a Stop to its further Increase, Pits and Scars must needs be the Consequence.

MANY Inventions have been sought out, and many Remedies have been thought of, to prevent variolous Deformities ; I shall set down several, perhaps the Reader  
may

may among them pick out some good Hints of what to do, or at least of what to avoid.

1. THE very best Thing any one can aim at for this Purpose is, at the beginning of falling sick, to use all Things possible to hinder large Assimilation and a fluxing flaming Pox.

2. IF that cannot be done, the next best is, to moderate the first Fever, but more especially the second Fever, by proper Evacuations in time, and by the Use of cool Regimen and Remedies; for 'tis the Heat and Vehemence of that Fever which acuates the Virofity of the Matter, and causeth Pits and Scars.

AND if it were but for this Reason only, Inoculation is greatly commendable; forasmuch as it never occasions the second Fever, and consequently never leaves Deformities.

3. TO hinder the Pustles from breaking out much in the Face, which hath been attempted,

1. BY Revulsion, or causing the Blood to run more plentifully and forcibly in the *Arteria descendens* thro' the lower Parts, than in the *ascendens* thro' the upper Parts of the Body.

FOR this Intention hath been order'd Bleeding in the Foot; and *Diemerbroeck* particularly commends it for the Prevention of Pock-holes.

TO this Purpose is advis'd keeping of the upper Parts, especially the Head and Face, cool, and the lower warm, till Eruption be past; wearing Stockings Night and Day; applying hot Things, such as heated Sand-Bags to the Soles, or rubefying Cataplasms:

As also bathing the Feet in warm Milk ; but this may endanger giving of a Cold ; and *Diemberbroeck* upon Experience found it fail twice, and so put no Value upon it.

2. BY Derivation, or directing and drawing the various Matter to other Parts in the upper Province of the Body, by the Use of Epispastics, Cupping with Scarification, rubefying Cataplasms, &c.

3. BY Repulsion. Some have dar'd to use refrigerating, obstipating, repelling Topics.

*SCHOTTUS* (in *Wedel's* Disputations) tells of a certain Countess, who cover'd her three Daughters Faces all over with Virgin Wax, and so entirely secur'd them.

*SIR Kenelm Digby* (but he was a Man of Fancy and Credulity) highly commends anointing of the Face with Oil of Almonds, and then covering it all over with Leaf Gold, which he relates was so strangely and apparently available in a certain Maid, that half her Face, where the Gold lay, was clear from any Pocks at all, and the other half, where they laid no Gold, was deform'd with Scars.

*DIEMERB.* saith, he saw three or four, who by washing with Breast Milk, had their Faces so preserv'd, as to have not so much as one Pock there, tho' they had plenty of them all the Body over besides.

HE knew of four more that kept the Pustles clear out of their Faces, by washing twice or thrice a Day before coming out, and some Days after, with *Aqua Cinnamonii* distill'd from Cinnamon, and Borage Water, and keeping the Face continually and carefully in a due Warmth ; but whether the same Success will follow always, he saith Experience only can determine.

I have

I have heard of some that dar'd run the Hazard of keeping on their Faces Linnen dipp'd in cold Rose Water, and changing it as often as it grew warm, or dry.

BUT such Practices as these are too dangerous to be imitated, by any but such as had rather lose their Lives, than the Skin of their Faces; because the variolous Matter, when it is prepar'd for Eruption, if it be hinder'd from coming out there, will be apt to be driven inwards, and fall into the Throat or Brain, yea perhaps upon the Optick Nerves, and so cause an utterly incurable Amaurosis.

IN the *Zodiac. Med. Gall.* there is an Account, of one who was directly kill'd (as 'twas judg'd) by anointing her Face only with Juice of Marsh-mallows.

4. A fourth Means hath been, to soften the Skin and open the Pores, and to attenuate the variolous Matter, that it may transpire, as that of the Measles doth.

*PRÆSENS Remedium contra variolas Faciei, nè tam fortitèr vel Confluant, vel Faciem de honestent, est ut ab initio Pustularum prorumpentium Facies illinatur Spiritu Vini Myrrhisato, ad duos dies, repetitis vicibus, & Præterlapsis diebus duobus, Saccharum Saturni in Aqua Rosarum mixtum Linteaminibus intinctis Faciei, sæpius iterando applicatis.*

*SÆPIUS cum maximo emolumento applicatum est & observavi, quòd etsi variolæ copiosæ fuerint, tamèn relictas Cicatriculas, post vix apparuisse.*

THUS Cnoeffelius; but tho' Spirit of Wine perhaps may be allowable for this Purpose, yet I cannot think this Piece of Practice over safe, because *Saccharum Saturni* is in an high Degree Refrigerant and Repellant.

I had the following communicated to me by a Physician, long since dead.

TAKE a Gallon of new Milk, make a Poffet of it with Canary Wine and Juice of baked Turnips, of each a Quart.

IN this Poffet infuse warm, and close for fix Hours, Elder Flowers dry'd Miiij. Flowers of Hypericum Mij. Saffron two Drams, and then strain out the Liquor.

ALSO make Masks of double white Flannel to fit exactly all over the Face; four at least: Then

POUR a Pint of this Liquor out for one Time: Warm it to that Degree that you can scarce endure your Hand in it.

DIP a Mask into it, and having wrung it out as dry as you can, clap it all over the Face, and lay a dry Mask over it, to keep it from soon growing cold.

RENEW these Masks every two or three Hours, being careful that they never grow cold upon the Part; and continue thus doing till the Distemper decrease, and the Scabs dry, and fall from the other Parts of the Body.

AT last leave off by Degrees, decreasing the Thickness of the Flannels till all may be taken off.

HE assur'd me, if the Nurses be careful, and let not the Party take Cold, this Bathing would safely and certainly preserve the Face, and also prevent its itching.

BUT this will require two Nurses more than ordinary; for if the Sick should become delirious, and tear the Dressings off, it may cost her Life; which yet may be provided against by sewing her Hands down, so as she cannot reach her Face.

Now,

Now, upon the Upshot, I am not able to judge whether this Device be safe and practical, upon the Account of Times of Sleep, which may not be hinder'd ; yet since it is a Thing (as far as I know) not heard of before, and seemeth to carry some Sort of Probability with it, I was willing to set down the whole Process ; but should be very sorrowfully concern'd if any Hurt should come by it.

5. To hasten the Maturation of the Pustles on the Face, that they may not have time to corrode.

To this Purpose, besides Internals before mention'd, and the Flannel Masks ;

SOME advise to wash with a Decoction of Peas ; others anoint the Face twice a Day with Rape Oil, which I suppose they chuse, because that Sort of Oil is not apt to dry ; others use Oil of Almonds, or Nut Oil.

*GESSELINE* used to make an Ointment of the Fat of Bacon, held in an hot Pair of Tongs, and melted down into Rose-water.

*DIEMERB.* tells us, it is a Secret of the Court Ladies to roast on a Spit the Cawl of a Barrow Hog, and let it drop into Rose-water ; with this they anoint the whole Face, and then cover it over with thin Slices of Fat of the same Hog, and renew it twice a Day, till the Scabs come to full Maturity, and drop off.

BUT the same Author himself commonly adviseth his Patients to foment, at the beginning, the whole Face with a Sponge fill'd with well-boil'd Mutton Broth, the Fat being taken off, and repeat it several times a Day, even till Maturation ; and from that Time to leave it off, and commit all to Nature.

I think it needless Supererogation to write down many more of the like Sort.

THIS Design of hastening on Maturation I should highly approve of, if I were satisfy'd it could be done ; but I am half persuaded it cannot be hoped for from outward Applications.

AND as for inward Medicines, and due Management, tho' they possibly may something moderate the second Fever, and qualify the great Symptoms, yet they can never spur on Nature so much, as to make her go one Day faster than her own Pace is ; and therefore we cannot expect that Ripeness will be brought on by any Art much sooner in the Face, than the general Course of the Distemper performs it in the rest of the Body.

6. TO let out the Pus as soon as 'tis ripe, that so it may not lie long enough in the Abscesses to putrify and erode the Flesh under them.

SOME therefore have open'd the Pustles with a sharp Golden or Silver Pin, or with the Point of a Launcet, or have snipp'd off the white Heads with Scissars.

BUT this Practice bringing neither solid Reason nor good Experience to vouch for it, I like it not ; and that because,

(1.) IT is needless, since at that Time when it is advis'd to be done, the Ulcers begin to dry up into Scabs, and quickly fall off of themselves.

(2.) IT can do no good ; for such Apertion is never attempted till the Pustles are fully ripe : But when the purulent Matter is perfectly concocted, and brought to a State of Maturation, it ceaseth to be any longer corrosive,  
and

and so having spent its Malice, and done its worst in eating away the Flesh, the taking it away can be of no Service at all.

(3.) IT may do Hurt; for when the Pus is evacuated, the empty Cavities will grow dry and hard, and so will hinder the Flesh, that is under the Pustles, from growing up to fill the Hollownesse that were eaten away.

WHEREAS if the Abscesses be not open'd, and the Pus in them be permitted to scab and dry up by Degrees, then the Flesh under them being kept soft, supple, and in a growing way, may possibly come to fill up all the Cavities by the Time that the Cutis is regenerated, and the Scabs fall off.

COMMON Experience establisheth the Truth of this; for every one knows, that where the Sick scratcheth off the Scabs, he will be most pitted and mark'd.

THEREFORE, tho' this Course pleadeth Antiquity, and *Arabian* Authority, yet it is by no means to be allow'd of.

MUCH less is that of those that would have us not only make Apertion, but also wash the open'd Abscesses, cleanse out the Pus, and dry up the Cavities, as soon as it can be done, with Salt Water, Detergent, Astringent, Styptic Lotions, or desiccative Unguents.

FORESTUS furnisheth us with the following Instance of Mischief caus'd by such Means: A certain Person, of about thirty Years old, having the Small-Pox, anointed his Face all over with Butter fry'd till 'twas black: (then it dry'd powerfully as being Empyreumatic) The Event was, that his Face was miserably deform'd with Scars: He lost one Eye; and if the Author had not taken due Care, he had lost the other also.

7. To hinder the Pus from drying up too soon, for the Reasons just above given for this Purpose, it may be good to foment with a Sponge dipp'd in a warm Decoction of Mallows: Oily Things, that neither heat nor cool, seem proper; among these I much fancy Neats-foot Oil, which being Animal, I take to be more congenerous to our Bodies than that of Almonds is: *Ol. Vitel. Ovor.* is commended.

8. To promote the growing up of Flesh into the Cavities, I acknowledge we have nothing in Surgery that is truly and properly Sarcotic, since the generating of Flesh is the sole Work of Nature; but we call such Things so as resist Putrefaction, and cause no Pain; neither heat nor cool the Part, but keep up Temperature; and tho' they something restrain thin Gleet, yet they dry up the Pus too fast: For this Purpose may be used,

*Ol. è Pedib. Bov.*

*Farinæ Maltæ ℥℥. Cremor Lactis q. s. m. f. Ung.*

ABOVE all Things, the Face must be secur'd, as much as possible, from the cold Air.

PERHAPS it might be beneficial to wear a Mask till all the Scabs be fallen off, the Face become smooth, and the under new-generated Flesh is firm and hard again.

WHEN the Scabs go away, it is very prejudicial to rub, or even wash the Face, till all be quite well and clear again; because if the loose scurfy Cuticula be continually scour'd off, the Air coming at the tender Face, will make the new-growing Flesh callous and hard, and so hinder its plumping up full in the Pits.

To conclude this Matter, since many of these mention'd Means and Methods have been found unsuccessful,  
and

and some of them hurtful ; I content myself with cautioning of Practicers ; and declaring, that my Opinion is, he doth best that employs his Endeavours to render the Distemper mild and moderate, and tampers not overmuch with external Applications.

DR. S. doth nothing at all towards the Prevention of pocky Marks, only in the last Days, when the Face groweth stiff by reason of crusty dry Scabs, he supples it often with Oil of Almonds, both to mitigate that Stiffness, and also to cause that the hot Effluvia may the more freely exhale.

WHEN the Scabs fall off, some anoint with *Sperma Ceti* melted in a Spoon, and laid on with a Feather ; or with *Ung. è Sperm. Ceti Batean.*

## U L C E R S.

IF filthy Ulcers remain after the Small-Pox, *Amatus* washeth with a restringent Decoction, made with *Ros. rub. Bacc. Myrt. summit. Querc. &c.* and then streweth on the following Powder :

℞ *Thur. masc. Sarcocol. Ros. rub. aa. q. v. f. Pulv. subtil.*

FORESTUS useth *Ung. Camphorat. alb.* or the following, which some have commended highly :

℞ *Plumb. ust. ʒj. Litharg. ʒʒ. Cerussæ lotæ, & Aceti aa. ʒij. Ol. Ros. ʒʒ. Mel. Ros. ʒʒ. Vitel. Ovi jʒ. Myrrh. ʒij. Cera q. s. m. f. Ung.*

## REDNESS.

**T**HE Redness of Face, which remaineth many Times after the Scabs are all gone, and the Places where they stood quite well, I take to be occasion'd partly by the boiling Blood, which in the Time of the second Fever as 'twere scalded the Skin, and partly by the fresh red Colour of the new-grown Flesh, in some sort visible through the as yet thin and transparent Cutis and Cuticula: The first of these is a Blush all over the Face, the other is only Spots; and these continue,

1. TILL the Cutis attaineth such a Thickness and close Compactedness, as to take away its Transparency: Or,

2. TILL the little new-bred Portions of Flesh, by Tract of Time, harden, and lose Part of their Freshness.

To take off these Blemishes, some have advis'd washing the Face frequently with cold Water; but whether Milk Water, Bean Pod, Frog Spawn, or the like distill'd Waters, have any peculiar eminent Virtue this Way, I cannot tell, but suspect they have not; if *Saccharum Saturni* be dissolv'd in them, they will be likely to do their Work the sooner.

ELIZABETHA Angliæ Regina contractas variolarum suppuratione Maculas, in seipsâ delevit Emulsione lacteâ ex semine Cannabino (separatis Corticibus) cum Aquâ Rosarum paratâ, & cum Gossypio admotâ. Burnet Thesaur. 873.

To daub the Face with smearing Oils and Unguents, will but foul and dull the Skin: If any should unadvisedly

vifedly do fo, *Liquamen Tartari*, *Lac Virginale*, *Tinct. Benzoini*, &c. dropp'd into Water, may (if timely ufed) fcour it off again.

BUT *Diemerbroeck* always found it beft to do juft nothing at all ; Time and cold Weather, efpecially frofty Mornings, will harden the Flefh, and thicken the Skin, and cure the Rednefs quite ; but at the fame time 'twill put a Stop to the further Growth of the Flefh in the Cavities, and thereby occafion the Pits and Scars to be deeper and plainer.





A N  
APPENDIX  
CONCERNING  
INOCULATION.

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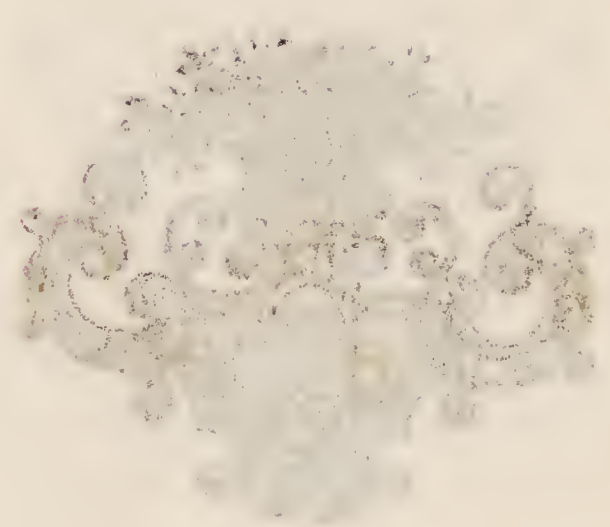
L O N D O N :

Printed in the Year M.DCC.XXIX.

APPENDIX

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INOCULATION



1795

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O F

# INOCULATION.

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## O B J E C T I O N S.



THE Devil inoculated *Job* with the Small-Pox; and therefore it is a wicked Thing to use it.

THIS is one of the most marvellous Arguments that ever was seen in a Sermon.

IF this were so, then *Moses* inoculated the Beasts, as well as the Men, throughout all the Land of *Egypt* :

FOR that Word which in *Job* ii. 7. we render *sore Boils*; and *Exod.* ix. 9. *Boils*, and *Blains*, is now the very same in the *Hebrew* Original.

AND if it were a wicked Thing because the Devil administered it, it was sanctified again by God when he commanded *Moses* to do the same.

Now

Now if a Man to whom the Bishop hath said, *Receive the Holy Ghost*, should grow so abandoned, as to wrest, and ridicule the sacred Scriptures, and preach and print the same, his Friends ought to advise him seriously to consider, whether this be not *A* (if not *The*) Sin against the Holy Ghost; who spake by the Prophets, and inspired the holy Pen-men, and is God tremendous.

2. IT would make one smile to see some, who are not in common Life more remarkable than their Neighbours, for Works of Piety, Probity and Humanity, taken with a Shiver of Conscience, forsooth! and a Fear that Inoculation is unlawful, forasmuch as they conceive it is a Tempting of Providence, for a Man, that is in Health, to throw himself voluntarily into a dangerous Disease.

BUT to me it appeareth on the contrary, to be a downright Ingratitude to God, to slight and oppose this great Remedy, which his Bounty and Goodness hath lately revealed and bestowed on us, to carry us with Ease and Safety thro' one of the most loathsome and perilous of all Distempers, and free us from the Fear of it for ever afterwards.

AND as to the Prudence of this Practice, and the common Usage of Men, let us put parallel Cases.

Is it not a greater Tempting of Providence, that when a Man may stay safe upon Land, yet for the uncertain Hope of getting Riches, he ventureth the vast and numberless Hardships and Hazards of the Deep, and often perisheth in the Attempt?

Is it not a transcendent Tempting of Providence, for a Man who is tolerably well in the World, and is not compelled to it, to enter himself into an Army in Time of War, where he is at the Mercy of every Bullet, and thousands of  
Accidents,

Accidents, and where he runneth the Risque of losing Limbs, Life and all, and at last cannot hope to gain much thereby?

NAY, I will drive the Matter so far as to say, If it were utterly unlawful to run one's self into any Danger of Life, upon any Pretence whatsoever, where there is not an absolute Necessity for it, then it would be utterly unlawful to keep up and preserve human Race upon Earth, by a Woman's venturing to be with Child :

FOR there was not an unavoidable Necessity of her being so, and yet she thereby runneth herself into great Hazards of Life for three Quarters of a Year together before Parturition, and commonly some Weeks after ; and great Numbers lose their Lives by it.

THE Case of Inoculation (according to my Apprehension) standeth thus :

IF any great Evil, threatening Life, will probably fall upon us, we know not when, tho' we are not infallibly sure it ever will at all ;

AND we have it in our Power to prevent the Danger of it, whenever we please, by doing something that hath but little Trouble or Peril in it ; in all Prudence we are bound to do it.

NOW to set this Matter in a clear Light, let us suppose an Island into which the far greater Part of Mankind will be unavoidably forced, whether they will or not, to go once, and but once in their Lives ; and none can possibly foresee who shall be forced, or when.

ALL that went formerly, used to wade thro' a most dangerous River, wherein about one in six were generally drowned :

BUT

BUT of late a Ferry-Boat hath been built; which is alway ready at Call, and in which the Passage is easy, and so safe that not above one in fifty have been known to fall Over-board, and perish; and those few that did so, had their Misfortune from some Accident, Carelessness or Mismanagement, and in no wise from any Fault in the Boat.

AND now let any one, whom groundless Prejudice hath not robbed of all his Thinking, and Reasoning Faculties, judge whether it be not abundantly more prudent, and preferable, to chuse a Time when it is most convenient for him, and then voluntarily ferry over, and so secure himself for ever, than to be at unawares snatch'd up, and, against his Will, forcibly hurled headlong into the hideous River, there to plunge about, and struggle for Life many Days, and be drown'd at last; or if he happen to get out, yet it may be but badly, with Marks, Scars, and Deformities, and perhaps total Loss of Sight.

BUT since this is pretended to be a Matter of Conscience, I will suppose a Man hath resolved to be inoculated, and hath procured a remote safe House for it: This done, a busy Body dissuades, and turns him off from it: A while after he catcheth the Small-Pox, and dies, and the Contagion spreading, an Hundred more die of the same:

WITH what Conscience can such a mischievous meddling Wretch look back upon that lamentable Destruction of Men, and the long Train of Miseries and Calamities that follows from it, which he was really and effectually the Cause of; for the Cause of a Cause, is the Cause of the Thing caused?

3. IT is an uncertain Practice; some having been inoculated without Effect.

IN such Cases, perhaps, the Pus was stale, and had lost its Variolosity. I have known where after such Pus had missed, fresher being used, hath done the Business effectually.

BUT tho' the Pus were not in Fault, it is no Wonder if it should here and there not answer the Design; it is nothing but what is common in that which they call the Natural Small-Pox; for it is a usual Thing for a Person to be within the full Sphere of Contagion, and cannot catch it at one Time, and yet shall take it at another, when there seemed not so much Danger. Besides all this, some are so constituted, that they are almost incapable of receiving the Distemper. I have, in Place, given divers Instances of such.

4. IT doth not always produce the true Small-Pox.

MY Notion of this Matter is, that the variolous Semina are as special, and cognate to that Distemper, as Seeds are to their proper Vegetables, and cannot possibly, by the Power of Nature, produce any thing but the true Small-Pox, any more than Thistles can Figs: Let any one bring a fair Instance plainly to disprove this.

5. THE Pus may be taken from one in a Confluent Pox, and thereupon may breed a very bad Sort.

I answer, though it be most eligible to take it from a kindly Distinct Sort, yet if such cannot be procured, I should not in the least scruple to receive it from a Confluent, for I know it hath succeeded well: That which was used upon those in *Newgate*, was taken from a Servant that had a violent Flux, and dy'd of it; yet all of them had but few Eruptions.

By many Observations we are undoubtedly assured, that it is the Management of the Patient, and State of the Blood, that makes a good or a bad Sort.

AND what that State of Blood is, we know not, for there is nothing more common, than for a Boy, under Fourteen, to have the worst bleeding, mortifying Pox; though we might think his Blood were soft, sweet, and balmy: and every one hath seen a good Sort beget a bad one; and on the contrary.

BUT this is not much to be fear'd here; forasmuch as Inoculation (the Reasons of which I shall enquire about by-and-by) generally produceth a Distinct Pock, seldom a Contiguous, and scarce ever a Confluent.

6. THE Pus may bring other Distempers along with it.

WHY may not other Diseases be more likely to be taken with a chancing Contagion from foul Bodies, that are sick of the Distemper we know not how, than with a Pus which cometh from Persons that are known, or judged to be found?

PEOPLE may have evil Suspicions of what they will, but I believe no Man ever found it so by Experience, that Itch, Leprosies, Scrophulæ, Consumption, were thus convey'd; and it would be a base Thing in any one to bring Falshoods to prop up an espoused Opinion.

AGAIN, all that happens upon Inoculation is not to be laid to its Charge. In the Natural Small-Pox, the Effluvia of other Fevers have been taken into the Body at the same Time, and thus the Measles and Small-Pox have been seen together upon the same Person; even as Wheat and Rye may be sowed and grow up in the same Field.

Now

NOW if the Seeds of different Diseases be at any Time joined to, and carry'd with the inoculating Pus into the Blood, in my Opinion, they must be only such as are feminal, active, operative, and truly infectious; and such must produce nothing but acute Distempers, that will pass off in a little Time, and leave no ill Chronic Affections behind them. And thus it is very usual for Eruptive Fevers, that are of different Families, to appear together.

UPON these Considerations, in the Choice of the Pus to be used, tho' it would be unadvised, to take it from one tainted with Scabs, *Lues Venerea*, or any other unclean Body, yet I do not plainly see what Harm could come from it, if it should be taken from many Sorts of Valetudinarians.

SUCH as those that are of weakly Constitution, are Cachectic, Icteric, Hydropic, Chlorotic;

ARE troubled with cold, windy Stomachs, Cardialgia, Vomitings, Loss of Appetite, bad Digestion, Gout, or Stone;

ARE Hæmoptoic, Consumptive, or have a Phthific; have weak Nerves, are Hypochondriac, Hysterick, or Epileptic.

7. IT is not a Security against having the Small-Pox afterwards.

SOME have been reported to have had the Distemper again, when they took it by common Infection; and therefore if it ever were so, it is possible it may be so by Inoculation also; but that gives not any Preference to natural Infection.

BUT I verily believe this is a Thing that never yet was observ'd, and so is no Objection, till it appear otherwise.

8. It is a very dangerous Thing.

JUDGE any one which is most dangerous, that by chancing Infection, which commonly kills One in Six; or that by Inoculation, under which there seldom dieth (all Casualties reckon'd in) not above One in Fifty.

I declare I have seen many inoculated, and among the rest my only Son; and I never saw it produce a Confluent Sort, or any ill Symptoms, and I have known but One that dy'd of it; of him I will give an Account in its Place.

FROM all the Observations I have made, I am persuaded, and I think perfectly assured, as I can be of any thing of this Nature, that if the Patient be one that is fit for it, and be tolerably well manag'd, he will be safe.

9. It may bring the Distemper into a Town where it was not before, and so be the Occasion of the Death of many, and may destroy the Trade of the Place.

TO this it is to be said, that when the Small Pox cometh into a Place, it commonly spreadeth Contagion, either because the infected Person is not known so to be soon enough to be avoided; or a convenient House remote from others is not procured; or due Care is not taken to prevent the carrying about of Contagion.

BUT neither of these need happen where it is brought the artificial Way; for here it rusheth not on People at Unawares, but at such a Time as is agreed upon and appointed for it; and such Dispositions are made, and such Lodgings got, as with common Care, will not send out the Disease to others.

It may be further said, that the more Persons of a Town are inoculated, the fewer will be left to catch and  
disperse

disperse the Distemper at other Times in that Place; and so this Practice may be said, in some sort, to make a Place less susceptible of Infection for the future than it would otherways have been.

10. THE Quantity or Dose of the subtile Particles contain'd in the grosser Pus, which give the Small-Pox, cannot be ascertain'd; and therefore the Operation of Inoculation must be uncertain and empirical.

To this I take Dr. *William's* Answer to be full and sufficient, *viz.*

As far as hitherto we have learned from Experience, it does not appear, that any great Regard ought to be had to the Quantity of the infecting Matter; for the Number and Kind of the Small-Pox don't seem to depend so much on either the Quantity, or even the Quality of the Matter apply'd to the Incisions, as on the State of the Blood, and other Humours at that Time, and the Management of the Sick.

WHICH may be illustrated by the Observation of a Spark of Fire's setting a Tun Weight of Gun-Powder on fire as effectually as a lighted Faggot would have done: And so, by Parity of Reason, a Grain (or perhaps the hundredth Part of a Grain, or as much as will stick to the Point of a Needle) may prove sufficient to produce the Distinct Sort; and ten times more than that Quantity would produce but the same, in a Body either naturally, or by Art freed from its Recrements, and fitted for the Reception of it.

BESIDES we may better judge of the Quantity of infecting Atoms taken from a little Pus at once, than we can of those sucked in by we know not how many Inspirations.

II. THE Pustles scarce ever plump up to that degree, and contain so laudable a Matter, as they do in the Natural Sort.

THE same Dr. *W*'s Answer to this is : I shall believe my own Senses before any one's bare Assertion; and I solemnly declare, that all those I have hitherto seen inoculated, had the usual Symptoms; which in the Course of a pretty many Years Practice I always observed to precede the Distinct Kind, which began to seize them about the seventh Day from the Inoculation :

THAT these vanished on the Eruption ; the Pustles daily increasing in Bigness, were filled with laudable Matter, and about the usual Time disappear'd, the Scabs falling off by degrees, as they commonly do in the most favourable Species of that Distemper ; and that they all recovered without any subsequent ill Accident.

### PERSONS *Fit, and Unfit for this* OPERATION.

**I**T may be used upon Infants at any Time before, or after Dentition ; upon Adults, even to Seventy Years of Age.

It should be very cautiously done on,

1. CHILDREN, during the Time of Dentition.
2. WOMEN with Child.
3. SUCH in whose Families the Small-Pox hath used to be fatal.
4. SUCH as are extremely fearful, fanciful, hysterical, or hypochondriac.

5. SUCH

5. SUCH as are of hot choleric Constitutions; are apt to Fevers, inflammatory Affections, Pluresy, Erysipelas, &c. and such as have lately surfeited and overheated themselves with *Bacchus*, *Venus*, or great Labour.

6. SUCH as use to spit Blood, or have over-much Catamenia.

7. SUCH as have a Phthific, Consumption, Hectic Fever, &c.

8. SUCH as have the King's Evil, or Gout.

### *The* ADVANTAGES of INOCULATION.

1. SUCH only may be chosen for it, as are fit, as to Age, and all other Matters, and are likely to go well thro' it; when as the Chancing Pox taketh all, without Election, or Discrimination; those that cannot, as well as those that can bear it.

2. AN exceeding valuable Advantage it must needs be that a convenient Time may be pitched upon to have the Distemper in; whereas the other Sort may surprize People, when they chance to be in great Families, that may be endanger'd by it, when they are far from Home; when they have great, difficult, necessary, and urgent Business upon their Hands; when they are lately recover'd out of a weakening Fit of Sicknefs; when a Woman lieth in; and when other Circumstances happen that may render it a most unfortunate, and undoing Accident.

A Time may be chosen, when a Man can best get Leisure to attend upon it; hath set all his Affairs in Order; hath taken Care for the Safety and Commodities of his Family; hath provided proper Lodgings, Nurse, and all Things

Things needful; and when Women have newly finished their Month.

ALSO it may be undertaken in an healthy Season, when the reigning Small-Pox is of a kind and regular Sort; as also in the Spring, or Autumn, when the Air is temperate, tho' it may be done safely, be the Weather hot or cold, as we know by Experience.

3. TEMPERANCE and a cool Diet may be observ'd, and if it be needful to prepare the Body for it before-hand, Bleeding, Vomiting, or Purging may be made use of long enough before the Operation, to have all fully settled again into their natural, customary State of Quiet, so as to be in all Points ready for it.

4. IT secures one from ever having the Small-Pox any more, as certainly at least as the common Sort doth; and what Comfort and Satisfaction must it be, that a Man may trust his Children, or go himself any where without Fear, or may visit, and assist Friends when they lie sick of it, and few dare come at them?

5. IT never (except in Cases of Unfitness of Bodies, or bad Management) causeth much Trouble or Sicknes, but mostly produces a kind, Distinct Small-Pox, seldom a Contiguous, scarce ever a Confluent; is easily borne; soon passed over, very rarely leaves any Pits at all in the Face; and when it doth, they are so shallow as not to cause any Deformity.

6. THE inoculated Small-Pox being always distinct, or at most but contiguous, leaveth not behind it such Corruptions, Putrefactions and Foulnesses as the Confluent usually doth; for Boils, Blains, and other Maladies often are seen to follow the Confluent Sort; and some who were healthy before, become sickly all their Lives after it.

THE Distemper given by Inoculation is incomparably safer than that taken by chancing Infection: Dr. *Timoni* assures us, it had been for many Years practised in *Turkey* with almost constant Success.

MR. *Mather* writes from *New-England*, that it hath been made use of upon almost Three Hundred in their Neighbourhood, Young and Old, (from One Year to Seventy) Weak and Strong, Male and Female, Whites and Blacks; in Midsummer, in Autumn, in Winter; and it succeeded to Admiration.

HE saith he cannot learn, that any one dy'd of it, tho' the Experiment was made when the common Small-Pox had lately visited, and ranfacked the Town of *Boston*, and in little more than half a Year, of above Five Thousand Persons that had undergone it, near Nine Hundred had died.

HE confesseth that out of this Three Hundred, Five or Six died upon it, or after it; but from other Diseases or Accidents, chiefly from having taken the Infection in the common Way, by Inspiration, before it could be given them in this Way of Transplantation, which might very easily be done in such an Epidemic Season.

AND it appears by his Letter, that more than One of Five, and less than One out of Six have dy'd of the Distemper took by Infection; and as to those who died after Inoculation, most of their Deaths cannot be fairly charged on this Practice.

DR. *Nettleton*, upon diligent and exact Enquiry made of this Distemper in the Towns of *Halifax*, *Rockdall*, and *Leeds*, found that there dy'd above a fifth Part of all that had been infected in the natural Way.

By Dr. *Jurin's* Computation, One in Forty-eight, or Forty-nine (making more Allowances than needed) dy'd upon Inoculation, and by common Infection, One in Six.

UPON all which Mr. *Maitland* had Reason to say, that this Practice brings the Mortality of the Small-Pox, from One in Ten, to One in an Hundred; and if it obtain'd universally, would save to the City of *London* at least Fifteen-hundred People yearly.

*Why INOCULATION giveth a more kindly*  
SMALL-POX *than common INFECTION.*

THIS is a Problem, the Solution of which none hath hitherto attempted. My Thoughts of it are as follow:

1. WHEN the Pus is apply'd to the Incision, it is not that gross, viscid Part of it that we see upon the Lint, but the invisible and unconceiveably minute Atoms contain'd in it, that taint the Blood, and breed the Distemper.

THOSE Atoms were before Maturation exceeding caustic, and corrosive, but are attempered, and something cured of their ferine Acrimony by the softer Pus, when it comes to Ripeness; and therefore those that go in from the inoculating Pus, produce not so malignant a Pox as these do, which steaming out of the poisoned Blood of a sick Person, are immediately taken in by Inspiration.

2. A little Pus upon the Lint being apply'd to the Incision, probably cannot send into the Blood so much morbose Matter as may be drawn into it by the Breath taken from an infected Person.

FOR in an Hour's Time, there are commonly 1200 Inspirations, and every one of them carrying contagious Effluvia, the Quantity of all these must very much exceed what can be supposed to come from the small Quantity of the Pus on the Lint.

BUT these two Considerations of Quality and Quantity I do not lay so much Stress upon, as upon the Management of it afterwards, when it is admitted into, and commixed with the Mass. For,

3. VARIOLOUS Matter (if I apprehend it rightly) is of itself but a moderate Poison; but if it be heated much, after it is taken into the Body, that Heat exalts it up to such an intense Degree of Virulence, as is proportionable to that Heat.

NOW Poisons in, or upon external Parts observe different Times to exert their Forces in: The Bite of a Viper acteth immediately; that of a mad Dog, not till a considerable while after; and the inoculating Pus beginneth to take Effect manifestly about the sixth Day after the Operation.

AND all these Days, while the Matter lieth still in the incised Part, and is not made hotter than the Flesh is where it lieth, it remaineth much as it was in its own Nature, is but a moderate Venom, and accordingly breeds a gentle Small-Pox.

4. THE Incisions are as Issues, which (we see) admit not of one Red Globule into them, but only of limped Serum.

THAT Serum leisurely takes into its Substance all the variolous Particles that were contained in the Pus, and suffers none of them to mingle in among the Globules, but keepeth them (cool and temperate as they were) in

themselves (as it manifestly doth in the Case of the Chry-stals) till they have impregnated the variolous Ovula.

AND thus the Globuli be scarce at all affected, and but a small Quantity of morbose Matter assimilated; and that which is so, being not made acrid, the Disease is formed, carried on, and finished, without any turbulent Commotions, or remarkable Fever.

As to the Shiverings, and Flushings, that come and go before Eruption, they are occasion'd, not by any proper Ebullition of the Globules, but the Expansion of the vital Spirits rising up against the hostile Invaders.

THUS it is in the Matter of Inoculation.

BUT in a Small-Pox introduced by Infection, the venomous Atoms enter by the Vehicle of the Breath into all the little Bronchiæ and Vesciculæ dispersed throughout the Lungs, and there being beaten up, commixed, and strictly combined with the minutest Globules, inflame the whole Mass of the Blood.

FOR the Blood being elaborated in the Lungs by 140 Pulses, and 20 Respirations every Minute, every such larger Globule as used to flow in the common Stream of the bigger Vessels, is thereby broken into inconceivable Exiguities; for ought we know, one into ten thousand, or more.

AND each of these little Things is probably, in a very bad Sort, coupled with a variolose, virulent Atom, and made into a Molecula with it.

AND truly Things being thus, it is to me a great Wonder, that all Small-Poxes caused by Infection (especially in hot Constitutions, and Seasons, and where the Sick hath been treated with hot Regimen and Remedies) should not prove Confluent.

WHEN  
†

WHEN it doth not so, I take the Reasons to be, that the Consistence of the Blood being firm, and sound, it is not disposed to admit into it, nor assimilate any great Quantity of variolous Matter; and being sweet, soft, and chylous, it is therefore moderate and temperate; and upon that Account is not apt to rarefy too much, nor rise up into violent Ebullitions.

### HISTORIES of INOCULATION.

**T.** F. a young Surgeon, drew up the following Relation concerning himself:

*Octob. 1723. on Thursday*, at six in the Evening, I was inoculated in both Arms; and from that Time I wholly abstained from Flesh, and kept myself to a temperate and regular Way of living.

*6th Day.* I grew ill with Shiverings and Flushings by Turns, Pain in my Head, Back, and Limbs, and with Drowfiness.

7. I became Feverish, and exceeding dull; my Urine appeared thick.

8. THE Small-Pox came out, and my Fever abated.

9, 10, 11. THE Pustles continued coming out for four Days, in which Time they were all out, to the Number of between three and four hundred.

12, 13, 14, 15, 16. IN five Days after, they went quite off, without any more Trouble; and hence it plainly appears, that there is no Danger from Inoculation, because no second Fever follows it.

THIS, I think, is to be accounted for from the Discharge out of the Incisions, which was greater than could be expected: And thus I easily recover'd.

HISTORY II.

## HISTORY II.

*April 23.* **W.** *J.* a Youth of about sixteen Years old, was  
1728. inoculated, at eight in the Morning.

*6th Day.* HE began to feel some Disorders, with Head-ach;  
In the Evening he was drowsy.

7. CONTINUED out of Order: In the Forenoon had  
frequent sick Fits; in the Afternoon he was very sick,  
and vomited three times.

THEN he grew hot, and thirsty, with a quick Pulse,  
great Pain in his Head and Limbs, and such a Weak-  
ness in his Knees, that he could scarce stand; he was  
still drowsy; he slept indifferent well that Night.

8. HE remained hot, thirsty, sleepy, and very dull; he  
went to Stool all along in pretty good Order, but was  
rather costive than otherwise.

HIS Urine was turbid.

THE Incisions, which had run but little hitherto, made  
this Day a plentiful Discharge of thin Ichor.

ONE Pustle appeared on his right Arm, but was so  
young, and so small, that it was scarce a plain Pock.

HE slept but very little that Night, being terrify'd  
with frightful Dreams.

9. IN the Morning, the 'foresaid Pustle was grown some-  
what larger, and redder.

A few more had come out upon the same Arm, three  
in his Face, and as many in his Breast, and all as  
small as that of Yesterday.

*9th Day.*

*9th Day.* IN the Evening the Pustles shewed themselves in greater Numbers, and then the Drowfiness and Fever began to abate.

10. IN the Morning he found himself very much better; the Fever almost gone; the Pustles were considerably grown, and looked red at their Bases.

11. THE Fever was entirely gone; by the Evening the Eruption was finished, all the Pustles being come out, to the Number of about 200.

12. THIS Morning he thought himself as perfectly well as ever he was in his Life.

THE Pustles rose, and began to fill, and looked well, with Redness at their Bottoms.

13. THE Pustles grew large, and held Colour; the Interstices looked of a Damask Red; he complain'd of being sore.

14. THE Pustles grew still, and were much forer; two or three in his Face seemed inclinable to turn yellowish.

HE slept well a Nights, but had not had a Stool in eight Days.

15. THE Pustles began to dry with a Scab on their Tops in his Face, but those on his Hands remained as before.

16. THE Pustles were now fairly going off; he continued very well, and had this Day a Stool.

17. THE Pocks went all off from his Face, and were going from his Hands.

*18th Day.*

18th Day. HE took a gentle Purge, which agreed mighty well with him; and three Days after he repeated the same again.

THUS he became well, and had a good Stomach.

### H I S T O R Y III.

**E.** C. a Maid of 21 Years old.

1st Day. INOCULATED.

2. IN the Morning the Orifices a little grayish.

3. BLACKISH.

4. BLACKISH, and the Lips of the Incisions inflamed.

5. THE Blackness went off; the Lips were more inflamed; towards Evening she shivered a little.

6. THE Inflammations were quite gone; the Orifices were pretty well; her Head and Back ached; she was sick at times.

7. Sickness at times, and Pain in her Head and Back continued.

IN the Morning the Incisions had discharged much; but towards Night again, very little.

8. IN the Morning the Incisions had run well, and she was not so sick as before.

BUT in the Evening she had two Vomits, and two loose Stools; one Pock then appear'd on her Throat.

9th Day.

*9th Day.* THE Incisions discharged plentifully; her Sickness abated; she had troublesome Heat at the Soles of her Feet.

10. THE Heat of her Soles went off.

NOW she was much better.

THE Pustles continued coming out, but looked pale.

SHE slept badly.

11. THE Pustles grew redder, and she slept better.

12. THE Pustles rose well.

SHE had a Sore Throat, and began to spit a little.

SHE slept but indifferently.

13. HER Throat grew sorer, and Salivation increased.

NOW she began to complain of Soreness all over.

HER Face and Eyes swelled, so as to make her blind.

THAT Night she slept better.

14. MATTERS proceeded as before.

15. HER Soreness of Throat was something abated.

THE Pustles in her Face began to turn yellowish;

BUT she was still blind.

16. THE Soreness of her Throat grew something better.

THE Pustles appeared yellower in her Face.

HER Throat was pretty well.

16th Day. THE Swelling of her Face was so sunk, that now she could see a little.

17. THE Swelling of the Eyes went quite off.

THE Pustles in her Face were almost dry.

18. SHE grew sensibly better.

19. SHE found herself perfectly well.

ERUPTION began the eighth Day after Inoculation.

SALIVATION came the twelfth Day.

HER Face swelled the thirteenth Day.

THE Pustles turned the fifteenth.

SHE was quite well the nineteenth.

#### HISTORY IV.

**T.** H. a fat, gross-bodied Boy, about 11 Years old;

1st Day. WAS inoculated in the Morning.

2. THE Incisions looked grayish.

3. BLACKISH, and a little inflamed.

4. THE Blackness went off, and the Lips of the Incisions were more inflamed.

SEVERAL Pimples came out above the inoculated Parts; they and the Orifices itch very much.

5. SOON after the Incisions were dressed, he grew sick, and vomited.

6th Day.

*6th Day.* HE continued ill most Part of the Day, with Pain in his Head and Back, Shivering and Flushing at times.

7. HE was pretty well again all Day, and Night.

THE Incisions ran well.

8. HE was sick again: The Incisions perform'd well.

9. ALL were much the same.

10. SOME Pustles came in Sight upon his Throat and Arms, and a few upon his Legs.

11. A few more came out easily, and without Sickness.

12. A few more came out.

13. ALL the Remainder came out, and Eruption was finish'd.

HE had but few in all.

14. HE had no Fever; and felt no Pains nor Sickness.

15. BELOW the inoculated Part, on the left Arm, a pretty large, painful, inflam'd Tumour broke out.

16. THE Pain of the Tumour continu'd.

THE Pustles were almost dry.

17. HIS Arm grew better.

18. HIS Arm was almost well, and the Pustles were dry.

19<sup>th</sup> Day. His Arm became perfectly well.

He took a Purge.

ERUPTION began the 10<sup>th</sup> Day.

## HISTORY V.

7. G. a Boy of 13 Years old,

1<sup>st</sup> Day. Was inoculated.

2. IN the Morning the Incisions look'd a little grayish.

3. BLACKISH.

4. THE Lips of the Incisions appear'd a little reddish towards Night.

5. THE Blackness went off.

THE Lips were more inflam'd.

THE Orifices discharge an ulcerous Matter.

PIMPLES, with itching, come out above the Orifices.

6. HE had Flushings, and a few more Pimples broke out.

7. HE had Shiverings.

IN the Evening his Head and Back ached.

8. HE had the same Shiverings and Pains all Day and Night.

HE vomited twice, and had one Stool.

IN the Night he was a little light-headed.

9<sup>th</sup> Day.

*9th Day.* IN the Morning he was not so light-headed, and was a little better.

THE Incisions had run well.

ABOUT three in the Afternoon the Pustles began to be discern'd.

10. MORE Pustles broke out ; he felt himself well.

11. MORE Pustles kept coming out, and sensibly grew ; but they itch'd much.

HE was restless all Night.

12. THE Pustles rose, and look'd well, but itch'd very much : The Pustles were all come out, and were but few in Number.

13. THE Itching was more qualify'd.

14. ITCHING went quite off.

15. ALL Things proceeded well.

16. VERY well, and the Pustles were in a drying way.

17. THE Pustles were almost all dry.

18. HE was perfectly well.

19. HE was purg'd.

ERUPTION began the 9th Day.

## HISTORY VI.

*M. H.* a Maid, aged 23 Years ;

1<sup>st</sup> Day. INOCULATED.

2. IN the Morning the Incisions look'd grayish.

3. BLACKISH.

4. BLACK, and the Lips inflam'd.

5. THE Blackness went off. The Orifices ran.

PIMPLES came out about the Incisions.

6. THE Orifices ran well.

7. SHE felt herself something indispos'd, and shiver'd a little.

8. WAS indispos'd, and shiver'd all Day.

WAS sick all Night.

9. HER Sickness continu'd.

SHE had Pain in her Head and Back, with Shiverings.

IN the Night she was sick at Stomach, and vomited a little.

10. THE Orifices ran well.

11. HER Sickness abated.

A few Pustles were discover'd on her Face and Chin, and upon her Arm.

12<sup>th</sup> Day.

12th Day. HER Sickness went quite off.

MORE Pustles came out. She slept well.

13. THE Pustles kept coming out, and sensibly grew.

14. ALL the Remainder of them came out. She had but a midling Crop. They began to swell.

AND she felt herself very well.

15. HER Throat became sore, and she began to fall a Spitting.

SHE slept but indifferently.

16. ALL proceeded as before.

17. THE Pustles began to turn yellow in her Face.

18. THEY grew yellower.

19. THEY dry'd in her Face.

20. SHE was perfectly well.

THE Pustles appear'd the 11th Day.

SALIVATION came the 15th Day.

THE Pustles turn'd the 17th Day.

## HISTORY VII.

*A.* *B.* a Maid, aged 25 Years,

*1st Day.* WAS inoculated at three in the Afternoon.

2. THE Incisions look'd grayish.

3. THEY look'd blackish, and began to run.

4. WERE blackish : They ran pretty much, and itch'd.

5. PIMPLES came out about the Incisions.

6. THE Pimples grew bigger.

7. SHE had Shiverings, Pain in her Head and Back, Nauseousness, and an Inclination to vomit.

8. HER Pains went and came at Times.

9. SHE had frequent Shiverings and flying Pains, but they settled mostly in her Forehead and Eyes, and in an hollow Tooth.

10. SOME few Pustles appear'd toward Night.

11. THE Pustles came out mostly on her Arms, and a few in her Face. Now she felt herself very well.

12. SOME few Pustles more brake out towards Night.

13. HER Head ached. All the Pocks were come out this Day.

14. THEY rose, and fill'd well.

15, 16. THEY proceed without any Trouble.

17. SHE became perfectly well recover'd.

## H I S T O R Y    V I I I .

**M**R. *James Norden*, aged 23, of a good Habit of Body, healthy, active, strong, temperate, regular in Life, never apt to Fevers of any Sort ; his Pulse remarkably low.

H E was utterly averse to Bleeding, but was well purg'd before the Operation.

1725. *October 23.*

1. H E was inoculated in one Arm and in one Leg.
- 2, 3, 4. A F T E R the Operation he eat and drank, and took the Air, and liv'd as he us'd to do for four Days; and from that Time wholly abstain'd from Flesh Meat, and went but little out of Doors.
6. H E went to the Infirmary.
7. A B O U T four in the Afternoon had some small Shootings in his Back, and a dull heavy Pain in his Head.
8. H I S Head-ach increas'd much, but the Pain of his Back went off.
9. T O W A R D S Night some very small Matter, scarcely discernable, was perceiv'd in several Places.
10. A T nine at Night he vomited ; his Pulse was slower than usual ; his Urine appear'd turbid.
11. A T seven in the Morning he vomited, but with no great Sicknefs ; bled a little at Nose, yet without any plain Fever or Thirst ; Head-ach continu'd ; the Pustles kept coming out ; he had little Sleep that Night.

K k k

12th Day.

12th Day. A great many came out last Night, and this Day, and the Eruption was fully compleated: His Throat grew a little sore, which was the Forerunner of Salivation: He took a Paregoric, and got some Sleep the Night following.

13. HE was extreemly full of Pustles in his Face, Back, Arms, Thighs, and Legs; but had not many upon his Breast and Belly.

Now the Head-ach went quite off; the Pustles began to look red; his Head swell'd; his Throat grew sore; Salivation came; and all this without any sensible Fever or Sicknes; but he could not sleep without a Paregoric.

14. THE Pustles grew, and inflam'd; the Swelling of his Head and the Spitting proceeded laudably.

Now he was more thirsty than he had been before; his Pulse was something quicken'd, but his Heat not increas'd; he could not sleep without a pretty strong Paregoric.

15. HIS Pulse sunk, and became moderate again; now he had no Thirst, nor Fever.

16. TOWARDS Night his Throat grew better; his Body was all over sore; he had no Fever, but yet was restless.

17. THE Swelling of his Head, Forehead, and Eyes asswag'd, and fell down under his Chin to his Throat; the Interstices among the Pustles were very red; he complain'd of great Soreness; the Pustles turn'd yellowish upon his upper Lip, and they itch'd upon his Body.

17th Day.

17<sup>th</sup> Day. His Pulse was a little quicken'd; Salivation grew more moderate; he took very good Rest with the Help of a Paregoric.

18. HE now felt himself a great deal better; he had but little Soreness of Throat, and Spitting abated; the Pustles grew crusty in order to scab; he slept well with a Paregoric.

19. THE Soreness of his Throat went entirely off, and Spitting almost; he rose out of Bed, set up in an Elbow Chair a great Part of the Day, and bore it very well.

20. HE continu'd well.

21. IN the Night he was taken with great Pain in both Arms and both Knees; which was not from Inoculation, but from a Rheumatism, out of which he had recover'd not long before the Operation.

22. HIS Pains increas'd greatly.

23. ABOUT Noon they began something to abate.

24. HE was let Blood, and immediately upon the very Act reliev'd.

25. HIS Pains were much less.

26. THE Pains entirely left him.

AFTER all, he was purged three Times, and so was restor'd to perfect Health.

OBSERVATIONS *in this* CASE.

1. **A**LL the Time that the Incisions ran well, he had no Pain in his Back, nor Thirst, nor Dryness of Tongue, nor feverish Heat, nor any Sickness.

2. HE had not, during the whole Decumbiture, any Difficulty of Breathing, or Stoppage in his Nose.

3. HE made Water freely all along; his Urine was turbid till Eruption was compleated; and after that, was clear, and Amber-colour'd.

4. HE was kept in a constant, temperate, natural Warmth; only he rose two or three Times during his Sickness, just to have his Bed made.

5. HE drank as much Beer as he would: He refus'd Pectoral Drinks, and took no Cordials at all, tho' he had one always by him.

6. THIS was the highest Small-Pox that ever I saw from Inoculation, except the following; tho' it was not positively Confluent, it must be allow'd to be of the Contiguous Kind: It hath left many Pits, but those but shallow ones, in his Face.

7. THIS I impute to a Peculiarity of his Family; for it is certain, that some of them had the Bleeding Sort; several dy'd of the Confluent; and scarce ever was a kindly Sort known among them; and therefore if he had taken the Distemper by common Infection, it is probable he would have dy'd by it.

## H I S T O R Y IX.

*W.* Jeffery of Sevenoak in Kent, was about 25 Years of Age, naturally of a good Constitution, but had broken it, by giving himself up to drinking strong Beer, and (as I think) common Spirits, which occasion'd frequently Pimples in his Face, and render'd him subject to a Cough, Shortness of Breath, and inflammatory Distempers in his Breast, Stitches, and Rheumatic Pains.

ADD to all this, I have heard, that never any of his Blood that had the Small-Pox recover'd.

HE came from *London* thirteen Days before his Inoculation; and it's very likely, had both heated his Blood by drinking, and also taken Infection.

FOR some Days before the Operation he felt aguish Shiverings, much Uneasiness, and Shootings in his Limbs, which he would not make known, (as he afterwards confess'd) for fear Inoculation should be refus'd him.

1<sup>st</sup> Day. *Octob.* 28. TOWARDS Night (having not been let Blood, Vomited, nor Purg'd) he was inoculated.

2. HE walk'd four Miles to an Alehouse to drink strong Beer, and back again in the Evening.

THAT Night he felt Shiverings and Anguish.

3. HE was not very well, and in the Night had some Gripes, and two loose Stools; but never had any more.

4. BEING some little matter better, he walk'd to the same Alehouse, and back again, on the same Errand.

5<sup>th</sup> Day.

*5th Day.* HE was very much out of order all Day.

6. BEING now not able to go a Foot, he went on Horseback to the same Alehouse to drink as before.

7. HE grew downright sick; vomited, but not much; he felt great Pains in his Limbs, and such violent ones in his Back, that he was not able to go, no, nor so much as stand upright.

8. ERUPTION began, and the Pocks shew'd themselves chiefly near the inoculated Places, and in his Face.

9. THEY broke out in great Numbers, with some purple Spots among them.

10. THIS Morning I saw him, but never before nor after: The Pocks had fill'd, not only his Face, but his whole Body all over; and among them were interspers'd (especially on his Hips) innumerable Numbers of (not very small) flat Spots, some of a bright fiery, and some of a deep purple Colour, such as are seen in the Bleeding Small-Pox.

THOSE that were the true variolous Spots, elevated a little toward the last, but never chang'd Colour till a Day or two before Death; and then they became dusky blue, inclining to black.

THEY cluster'd a little in his Face, and grew not much, caus'd no Swelling, never look'd red, nor tended towards Maturation.

11. HE began to spit a little; but that continu'd but a Day or two, and then went intirely off again, and came no more.

DURING the whole Sickness he seem'd not perfectly sensible, and had very little Sleep.

*12th Day.*

12<sup>th</sup> Day. A Fever (which had not shew'd itself before) rose a little, but came to no great Height.

HIS Urine flow'd away involuntarily and insensibly.

13. BLISTERS, with clear Water in them, broke out upon his Wrists and Hands, as big as Filberds.

14. HE dy'd.

THIS is the only Case that ever I have myself seen of one that dy'd under Inoculation ; and I must think, that no one who reads this Account, can possibly have so much Partiality and Perverseness, as to say he dy'd by Inoculation.

PERHAPS many of those Stories that have been trump'd up, and sent about, to scandalize and discourage this Practice, if they were thoroughly examin'd as to all their Particulars and Circumstances, would be found to be either unfair Representations, or insufficient Proofs, of what their Authors have a mind should be believ'd.







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